APPENDIX 4-A

CAPITAL COST: DEFINITION OF COST ELEMENTS

APPENDIX 4-A

CAPITAL COST: DEFINITION OF COST ELEMENTS

The capital costs for the proposed HST Alternative have been categorized into discrete cost elements. In general, the capital costs were estimated by determining the appropriate unit costs for the identified cost elements and the cost element quantities from conceptual high-speed train alignment and station option plans prepared for each region. Each cost element is defined below along with the methods and assumptions applied in each case. Many of these elements were reviewed as part of the peer reviews of the Authority's Corridor Evaluation.[1] The unit costs and assumptions were also reviewed and in some cases revised by the regional teams as part of the alignment and station screening performed as part of this program. However, application of these assumptions is consistent with past evaluations and provides appropriate level of detail for the comparison of alignment and station options at this program level.

A. ALIGNMENT COSTS

Track Items

High-Speed Train Track: For steel-wheel-on-steel-rail systems (VHS), this includes ballast, subballast rails, ties, fasteners, etc. No special trackwork (turnouts, sidings, etc.) is included in this cost element. Cost for Special Track work is included as part of the Passenger Station Cost. The track required in the maintenance and service facilities, as well as the at-grade or elevated reinforced concrete substructures/foundation costs, including switches, within maintenance and service facilities are included in the cost of the those facilities.

Track unit costs were applied per unit length of alignment. Unit costs were applied to account for lengths of ballasted track section and direct fixation (slab track). Special trackwork costs were estimated based on Station Configuration.

The "ballasted track" unit cost, applied to most corridors, is $993,167 per km ($1,598,347 per mile) of alignment; this is a double-tracked cost. In areas where a single track is added to the existing corridor, this cost would be one half, $496,583 per km ($799,174 per mile).

For "direct fixation track", the unit cost is given as $1,878,243 per km ($3,022,738 per mile) of alignment. In areas where adding a single track is proposed, this cost would be one half, $939,121 per km ($1,511,369 per mile).

Earthwork and Related Items

Included in the detailed categories below are all the earthwork elements and other items related to site development.

Site Preparation: This includes the costs for "clearing and grubbing," which cover the removal of unsuitable surface debris, and removal of vegetation. This also includes the cost of "grading," which is the movement of dirt around the site to prepare the surface for construction. Site

[1] *California High-Speed Rail Corridor Evaluation German Peer Review Report (Phase I)*, DE-Consult Deutsche Eisenbahn-Consulting GmbH December 2000.

Review of The Final Report on California High-Speed Rail Corridor Evaluation (Phase I), Japan Railway Technical Service September 2000.

Peer Review – Phase I, SNCF International October 2000.

preparation also includes work done to make the site usable after the demolition of existing structures.

Unit costs for site preparation were applied to the total area required for earthwork operations along a given segment. The amount of area was based on the earthwork volume calculations.

Earthwork: The general category of "earthwork" is made up of four constituent activities: excavation, embankment, spoil, and borrow. Earthwork incidental to the construction of a structure, such as the excavation for a bridge foundation, is not included here—that cost is a part of the structural estimates.

Unit costs of earthwork were applied to the total volume of earthwork required along a given segment. A digital terrain model (DTM) was used to calculate the earthwork volumes based on the profile of each segment. If a DTM was unavailable an assumption of 1m (3.28 ft) (depth of cut/fill) by 8.3m (27.2 ft) (the width of the cross-sectional track bed) was assumed to be the required cut/fill quantity.

Landscaping/Erosion Control: This includes areas alongside the tracks within the high-speed train right-of-way. Plantings in station areas are included under passenger stations. The landscaping along the route includes the seeding of cut slopes and embankments. Site preparation and landscaping costs would only be applied to areas of new right-of-way for the alignment, including bypass alignments and corridor widening.

Security Fencing: This is a security chain link fence 2.5m (8.2 ft) in height along the right-of-way. All at-grade sections, trench sections, cut and fill sections, tunnel portals, maintenance areas, and any other areas where tracks are accessible to public would be fully fenced. A unit cost for fencing was applied per length of alignment and includes fencing for both side of right-of-way.

Drainage Facilities: This includes culverts and other structures needed for track and cross drainage purposes only, including track underdrains if needed. This does not include the cost of bridges or bridge drainage costs. The cost of drainage facilities was estimated at 5% of the earthwork cost for each segment.

Structures, Tunnels, and Walls

Structures are defined as those appurtenant elements that require structural engineering for system design, and fall into the categories below. Buildings (such as passenger terminals and maintenance facilities) are not included under structures, but are included other elements.

Viaducts and Bridges: This includes costs for prestressed reinforced concrete aerial structures including the bridge, as well as the abutment (for a bridge or viaduct). Cost for that bridge would consist of the excavation for the abutment including all wing walls and transition slabs. The foundation work is included as well as the earthwork needed to construct the foundations. Waterway crossings that were calculated on a per crossing basis are included under bridge costs.

A unit cost was applied per length of aerial structure. Different unit costs were used for "special structures" requiring spans greater than 120 feet (36.6 meters) and for "high structures with heights exceeding 30 feet (9.1 meters). Unit costs for other special or unique structures (i.e., bay crossing) would be addressed on a case by case basis at the subsequent project level analysis.

High-Speed Train Tunnels & Trenches: This includes tunnel boring machine (TBM) and drill and blast (D&B) tunnels constructed beneath the ground level that only require surface occupation (construction access) at the openings of the tunnel. The costs for these tunnels for the high-speed train system include all structural work, full lining and grouting, ventilation systems, special drainage, etc. needed to make the tunnel ready to receive the railroad. This item does not include the track, signaling or traction power systems, which are addressed in separate cost elements. Unit costs are applied per unit length of twin single track tunnel sections for two discrete cases: twin single track tunnels less than six miles in total length, and twin single track tunnels greater than 6 miles in total length. Tunnels greater than six miles in total length require a third access tunnel and additional ventilation/cooling facilities and are significantly more expensive.

Cross-over Chambers: This involves an oversized tunnel segment to accommodate universal cross over tracks at an average spacing of ten miles apart (not to exceed 12 miles) in long tunnel sections.

Seismic Chambers: This involves an oversized tunnel segment (3600' long x 77' wide x 37' high) to accommodate potential track realignment and passage of the train subsequent to a possible future fault rupture event along fault zones where especially large displacement is predicted.

Cut & Cover Double Track Tunnel & Trench: Used in Urban areas where depth of alignment is not sufficient for tunneling methods. The cost accounts for all anticipated labor, equipment, and mobilization costs. Cost includes excavation support, excavation bracing, excavation, structural backfill, and structure cost. Excavation includes removing the material from within the supported area and disposing of that amount of material not used for backfill or unsuitable for use. Structural back-fill includes obtaining sufficient, acceptable material for use, and the placing and compacting of that material. Cost does not include, traffic control, street relocation or utility relocation.

Mechanical & Electrical for Tunnels: This includes mechanical and electrical systems related to tunnel (such as lighting, fans, etc.). This is a cost for twin single track TBM length.

Retaining Walls: These are concrete walls used to support embankments and retained fill along cut sections (retaining walls that are a part of abutments for bridges are included in the bridge costs).

Containment Walls: These are structural concrete walls (including foundations and walls) required to prevent incursion of vehicles from one area to another. Generally, they are included whenever the high-speed train track is at-grade and adjacent to (within 30 feet [9.1 meters]) existing freight and passenger rail operations on dedicated portions of the high-speed train line (or alternative). Containment walls are also required adjacent to existing structures where prescribed by horizontal clearances (Caltrans Bridge and American Railway Engineering and Maintenance-of-Way Association [AREMA] Standards).

Grade Separations

Bridges and Undercrossings: These are highway and railroad overcrossings/undercrossings of the high-speed train system. All crossings with other transportation facilities must be grade-separated from the high-speed train system. The unit costs applied for these grade separations include all of the cost elements necessary to complete the construction of the grade separations, such as earthwork, traffic handling, drainage, etc. The number of existing crossings (roadway and rail) per segment was quantified per USGS planimetric information, field reconnaissance and

other mapping sources according to type (at-grade, under or over) and general land use density category (Dense Urban, Urban, Dense Suburban, Suburban & Undeveloped). Professional judgments were made regarding the proposed crossing type, including the option of closure for minor roadways, based on aerial photography and mapping. Costs were estimated on a per-crossing basis using an representative unit cost.

Building Items

Costs for all building such as station facilities are based on the conceptual designs defined in the Engineering Criteria Report.

Intermediate/Terminal Passenger Stations: Different Passenger Station facility unit costs were developed for several station classifications. The different unit costs account for differences in station size, configuration and general location. These costs are assumed to be a rough average, since station costs are expected to vary widely at specific locations.

Passenger Station: This includes cost of passenger platform and inspections platform (for certain stations) and also include tracks and special tracks going through stations plus substructure supporting tracks and platform outside of the main line track envelops. This cost also includes circulation, lighting, security measures and all auxiliary spaces including intermodal connection areas. Spaces are provided within the station for ticket sales, passenger information, station administration, baggage handling, and commercial space for newsstands, small restaurants, etc. Cost does not include cost of traction power, Overhead Catenary System OCS and signal and communication.

Parking: This includes all facility costs associated with the construction of parking structures and at grade parking lots including right of way.

Site Development: This cost involves the paving and landscaping of the site around the passenger station building. Also included in this cost is the provision of street and roadway modifications necessary to provide access to the site. Different site development unit costs are provided for several levels of station size, based on the forecasted ridership.

Rail and Utility Relocation

Railroad Relocation and Removal: This involves the cost of track relocations (temporary or permanent) or track removal required to place high-speed train track into existing rail corridors, including all construction work needed to relocate or remove the railroad, including earthwork, trackwork, etc. A unit cost was applied to the length of alignment requiring relocation or removal.

Utility Relocation: The cost of major utility relocations that must be done before constructing the facilities, such as overhead power lines, pipelines, sewers and fiberoptics and underground ductbanks. Different unit costs were applied to the total length of alignment based on the intensity of land use development along the alignment.

B. RIGHT-OF-WAY ITEMS

This relates to the total cost associated with the purchase of land and/or easement rights for the high-speed train system. This includes relocation assistance and demolition costs. Property values and acquisition costs can range from quite modest in undeveloped areas, to quite significant in areas

where high-value commercial properties near the stations are needed. These costs include those for title searches, appraisals, legal fees, title insurance, surveys, and various other processes.

The basic unit cost estimates assume that a minimum right-of-way width of 50 feet (15.2 meters) would be necessary throughout the length of each segment. Even when the alignment is primarily within existing rail rights-of-way, costs are estimated to account for the purchase and or lease agreements necessary for operation in these corridors. Wider right-of-way sections are necessary in mountainous areas where large cut and fill slopes are required.

Three general parameters were followed: (1) a minimum right-of-way corridor of 50 feet (15.2 meters) has been assumed in congested corridors; (2) a 100-foot (30.4-meter) corridor has been assumed in less developed areas to allow for drainage, future expansion and maintenance needs; and (3) a wider corridor was used in variable terrain to allow for cut and fill slopes, based on computerized terrain modeling of the alignment options.

C. ENVIRONMENTAL IMPACT MITIGATION

This cost is total cost associated with potential mitigation of environmental impacts such as impacts to wetlands, parkland, biological resources, and wildlife habitat. Noise mitigation with sound walls and right-of-way impact and relocation mitigation are estimated separately as defined above.

The total cost of environmental mitigation was estimated to be 3% of the line construction costs (i.e., track, earthwork, structures, etc.) for each segment, based on other recently implemented transportation corridors in California. This factor is based on the average to estimate a total cost of mitigation.

D. SYSTEM ELEMENTS

Signaling and Communications Items

Signaling: These costs cover the cost of wayside, on-board and central control software and hardware for the overall signaling system. The unit costs are applied per length of track. The VHS technologies operate either on the basis of moving block technology with automatic train protection (ATP) or automatic train control (ATC) and automatic train operation (ATO).

Communications: This includes a high capacity fiber optic backbone with full redundancy, which is key for the operation of the Supervisory Control and Data Acquisition (SCADA) and reliable ATC systems. The communication system would be used for operations; maintenance and emergencies; phone and fax capabilities (enroute); closed circuit television; public information systems; public address systems; and other monitoring and detection devices needed for a safe and efficient operating system. The unit costs are applied per length of track.

Wayside Protection Systems: This includes systems/equipment to monitor and/or detect obstacles that may be placed or fall onto the track; intrusion; flooding; wind; seismic activity and equipment failures (broken rails, hot axles, dragging equipment, etc.). The unit costs are applied per length of track.

Electrification Items

Traction Power Supply: This cost is the entire cost of the substations, including site preparation; foundations; cable trenches; fencing; electrical equipment, etc. The unit costs are applied per unit length of track. It does not include the cost of transmission lines from the local utility source

to the substations; those are included in the energy costs, a part of the operating and maintenance costs

Traction Power Distribution: This cost includes the catenary poles and foundations; the catenary wires and supports; tensioning devices; power feeders and returns; transformers and other appurtenances. The unit costs are applied per unit length of track.

E. VEHICLE COSTS

This includes costs for trainsets including an inventory of small parts estimated to be needed for regular maintenance. The costs are based on an estimated fleet size to accommodate the high-end ridership forecasts according to the conceptual operating plan, including estimated spare/out of service requirements. This unit cost includes a 15% contingency to account for uncertainties related to the variance of cost between manufacturers, burn-in and testing and other economic uncertainties at this stage of estimation.

The unit cost estimates for each train set are based upon published manufacturers' documentation on recent sales of in-service trainsets at the time of the preparation of this document, as well as telephone inquiries with representatives of the manufacturer. Five manufacturers were considered to develop the unit costs, which are representative of the different manufacturers cost information.

F. SUPPORT FACILITY COSTS

Costs for all support facilities are based on the conceptual designs defined in the Engineering Criteria Report. The support facilities include the Train Storage, Service and Inspection, and Light Maintenance Facilities defined near the terminal stations at Sacramento, the Bay Area (at Los Banos due to land use constraints in the Bay Area), and San Diego. They also include the Main Repair and Maintenance Facility to be located in the mid-portion of the system (Central Valley).

The costs include all costs associated with support maintenance facilities, including right of way and facilities. In addition to civil work and structural work, the unit cost includes trackwork, traction power, OCS and signal and communication and also maintenance equipment costs.

The facilities sizing was based on the greatest potential need (fleet size) associated with various operating scenarios. These operating scenarios are based on the Business Plan Sensitivity Analysis ridership forecasts, which represent the highest reasonable forecasted ridership, and the conceptual service plan from the Corridor Evaluation. For the purposes of defining these general facilities, we have assumed the following trainset storage requirements: Sacramento (9 trains), San Francisco/Oakland (15 trains), San Diego (21 trains), Los Angeles (4 trains), Fresno and Bakersfield (2 trains).

G. PROGRAM IMPLEMENTATION COSTS

Costs for these elements are computed as a percentage of the total of construction and procurement costs. The percentages are intended to represent the average overall cost of these implementation items, based on implementation of rail transit and other related improvement projects throughout the state. The percentages are predicated on a Design-Build (DB) and Design-Build-Operate-and-Maintain (DBOM) procurement approach and would be significantly higher using a traditional procurement approach. These costs would be divided between the owner and the contractor in this procurement approach and are noted accordingly. These costs should be included in the cost estimates for overall consistency in the order of magnitude.

Preliminary Engineering and Environmental Review

These are preliminary engineering design costs to approximately a 35% level. This would includes preliminary geotechnical investigations; land surveying and mapping; engineering; architecture; landscape architecture; traffic engineering; right-of-way engineering and preparation of preliminary plans and analyses in all necessary technical disciplines; and various other technical studies and support of the draft environmental document. The environmental review would entail all studies and analyses necessary to complete further federal and state required environmental documents. (Owner–2.5%)

Program & Design Management

Costs for the overall management and administration of the project. Included were the Program Manager's office, contract management and administration, project control including both cost and schedule, general administration, computer support, quality assurance, configuration management, system safety, publications, public relations, support of the bidding process, agency liaison, community information and involvement and legal support. (Owner–5.0%)

Final Design

Costs for final design and preparation of construction and procurement documents for all facilities and systems. This would include geotechnical investigations; land surveying and mapping; engineering; architecture; landscape architecture; traffic engineering; right-of-way engineering; preparation of plans and specifications in all necessary technical disciplines; and various other technical studies and support of the final design process. Design support during construction, including shop drawing review is also included in this item. (Contractor–5.0%)

Construction & Procurement Management

Costs for all management of construction and procurement work after contracts are awarded to contractors or suppliers. This would include on-site inspection in factory and field, quality control, contract administration and acceptance inspection. (Owner–1.0%; Contractor–4.0%)

Agency Costs

The costs of maintaining the owner's organization (or operator of the system) during the entire program, whether that owner is a franchisee or a government agency. (Owner–1.0%)

Force Account Costs

Costs for the services of other organizations or agencies of local, state or federal government that may be required to support the project. Work within railroad rights-of-way may be on force account with the appropriate railroad. There may be unforeseen costs as a result of moving the railroad to allow for high-speed trains. (Owner–1.0%)

Risk Management

The costs of owner (or operator of the system)-supplied insurance or any other allowances decided to be applied for the management of risk to the owner. (Owner–6.0%)

Testing & Pre-Revenue Operations

The costs of pre-revenue testing, acceptance testing, safety certification and training related to start-up of the system for revenue service. These costs would be included in the DBOM contract. These costs are not included as part of the program implementation costs at this level of evaluation.

H. CONTINGENCIES

A contingency is added as a percentage of overall project costs—based on past experience for projects in early stages of definition. Contingencies should not be considered as potential savings. They are an allowance added to a basic estimate to account for items and conditions that cannot be assessed at the time of the estimate. The contingency amount is expected to be reduced as the project matures. The contingency is estimated at 25% of the total of construction costs.

APPENDIX 4-B

CAPITAL COST: UNIT COST TABLE

Appendix 4-B
HIGH-SPEED TRAIN UNIT COST

	COST ELEMENTS	UNIT	UNIT PRICE (YR NOV-2006)
Alignment Cost			
Track Items			
	Double Track Section - Total	km	
1	Double Track Section - At-Grade	km	$993,167
2	Double Track Section - On Structure	km	$1,878,243
3	Double Track Section - In Tunnel or Subway	km	$1,878,243
4	Double Track Section - In Trench	km	$1,878,243
	Single Track Section - Total	km	
5	Single Track Section - At Grade	km	$496,583
6	Single Track Section - On Structure	km	$939,121
7	Single Track Sections - In Tunnel or Subway	km	$939,121
8	Single Track Section - In Trench	km	$939,121
9	Freight Double Track - At-Grade	km	$993,167
10	Freight Single Track - At-Grade	km	$496,583
Earthwork Items			
1	Site Preparation - Undeveloped	Hectares	$12,081
2	Total Cut	m3	$9
3	Total Fill	m3	$9
4	Borrow	m3	$13
5	Spoil	m3	$0
4	Landscape/Erosion Control	Hectares	$8,075
5	Security Fencing (Both Sides of R/W)	km	$101,733
6	Special Drainage Facilities	% of Earthwork C	
Structures, Tunnels, Walls			
1	Standard Structure	km	$13,733,933
2	High Structure	km	$16,480,720
3	Long Span Structure	km	$37,577,568
4	Waterway Crossing - Primary	km	$28,876,734
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643
9	Double Track Drill & Blast	km	$83,740,573
10	Double Track Mined (Soft Soil)	km	$96,247,282
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899
12	Crossovers	ea	$94,803,899
13	Cut & Cover Double Track Tunnel	km	$48,123,641
14	Trench Short	km	$49,668,587
15	Trench Long	km	$39,272,836
16	Mechanical & Electrical for Tunnels	km	$1,931,362
17	Retaining Walls	km	$4,399,945
18	Containment Walls	km	$1,500,559
19	Single Track Cut and Cover Subway	km	$30,077,276
Grade Separations			
1	Street Overcrossing HSR - (Urban)	ea	$17,167,417
2	Street Overcrossing HSR - (Suburban)	ea	$6,485,469
3	Street Overcrossing HSR - (Undeveloped)	ea	$1,093,628
4	Street Undercrossing HSR - (Urban)	ea	$17,930,413
5	Street Undercrossing HSR - (Suburban)	ea	$6,866,967
6	Street Undercrossing HSR - (Undeveloped)	ea	$1,157,211
7	Street Bridging HSR Trench	ea	
8	Minor crossing closures	ea	$178,032

Appendix 4-B
HIGH-SPEED TRAIN UNIT COST

	COST ELEMENTS	UNIT	UNIT PRICE (YR NOV-2006)
Alignment Cost			
Rail and Utility Relocation			
1	Single Track Relocation (Temporary)	km	$1,271,661
2	Single Track Relocation (Permanent)	km	$1,271,661
3	Single Track Removal	km	$63,372
4	Major Utility Relocations - Dense Urban	km	$890,162
5	Major Utility Relocations - Urban	km	$680,338
6	Major Utility Relocations - Dense Suburban	km	$476,873
7	Major Utility Relocations - Suburban	km	$273,407
8	Major Utility Relocations - Undeveloped	km	$13,988
Right of Way Items			
1	Right-of-Way Required for Each Segment		
	Dense Urban	Hectares	$4,106,412
	Urban	Hectares	$2,737,608
	Dense Suburban	Hectares	$1,368,804
	Suburban	Hectares	$479,081
	Undeveloped	Hectares	$342,201
Environmental Mitigation			
	Environmental Mitigation	3% of Line Cost	
System Elements			
1	Signaling (ATC)	km	$845,654
2	Communications (w/Fiber Optic Backbone)	km	$699,413
3	Wayside Protection System	km	$67,144
Electrification Items			
1	Traction Power Supply	km	$432,365
2	Traction Power Distribution	km	$806,233
Program Implementation Costs (PER SCREENING)			
	Program Implementation Costs	25.5% of Total Cost and Procurement	
Contingencies (PER SCREENING)			
	Contingencies	25% of Total Construction Cost	
Total Construction			
Total Construction and Right of Way (Includes Environmental Mitigation)			
Grand Total			

APPENDIX 4-C

CAPITAL COST: HST ALIGNMENT ALTERNATIVES (SUMMARY AND SEGMENT BREAKDOWN)

Appendix 4-C
High-Speed Train Alignment Alternatives Capital Cost
Includes Contingencies and Program Implementation Cost

Alignment Option by Region and Segment		Segment Length		Avg Cost		Segment / Station Costs
		km	miles	$ / km	$ / mile	
San Francisco to San Jose: Caltrain						
San Francisco to Dumbarton		**44.58**	**27.70**	**$49,175,138**	**$79,139,713**	**$2,192,227,640**
Caltrain 1	Transbay Transit Center to 4th/Townsend	2.50	1.55	$159,522,378	$256,726,381	$398,805,944
Caltrain 2	4th/Townsend to Millbrae/SFO	22.58	14.03	$45,352,477	$72,987,737	$1,024,058,938
Caltrain 3	Millbrae/SFO to Redwood City	18.75	11.65	$37,489,586	$60,333,640	$702,929,734
Caltrain 4	Redwood City to Caltrain	0.75	0.47	$88,577,366	$142,551,453	$66,433,025
Dumbarton to San Jose		**34.40**	**21.38**	**$39,358,880**	**$63,341,977**	**$1,353,945,475**
Caltrain 5	Caltrain Dumbarton Wye	1.62	1.01	$24,593,435	$39,579,297	$39,865,958
Caltrain 6	Dumbarton Wye to Palo Alto	5.23	3.25	$49,783,239	$80,118,357	$260,316,558
Caltrain 7	Palo Alto to Santa Clara	22.55	14.01	$26,212,143	$42,184,355	$591,083,820
Caltrain 8	Santa Clara to Diridon Station	5.00	3.11	$92,535,828	$148,921,979	$462,679,139
Station Options						
	Transbay Transit Center (Terminal Option)					$786,262,418
	4th and King (Caltrain) (Terminal Option)					$791,939,278
	Millbrae/SFO					$29,076,600
	Redwood City (Caltrain)					$67,516,558
	Palo Alto (Caltrain)					$67,516,558
Oakland to San Jose: Niles / I-880						
West Oakland to Niles Junction		**44.64**	**27.74**	**$35,744,748**	**$57,525,595**	**$1,595,717,028**
Niles/I-880 1A	West Oakland to Jack London Square	6.72	4.18	$77,055,201	$124,008,325	$517,810,948
Niles/I-880 2	Jack London Square to Oakland Coliseum	3.95	2.45	$55,088,733	$88,656,721	$217,600,493
Niles/I-880 3A	Oakland Coliseum to Union City (BART)	10.52	6.54	$76,504,832	$123,122,593	$804,983,844
Niles/I-880 4A	Union City (BART) to Niles Junction	23.45	14.57	$2,359,136	$3,796,662	$55,321,742
12th Street/City Center to Niles Junction		**43.02**	**26.73**	**$34,949,176**	**$56,245,246**	**$1,503,583,436**
Niles/I-880 1B	12th Street/City Center to Jack London Square	5.10	3.17	$83,466,148	$134,325,745	$425,677,356
Niles/I-880 2	Jack London Square to Oakland Coliseum	3.95	2.45	$55,088,733	$88,656,721	$217,600,493
Niles/I-880 3A	Oakland Coliseum to Union City (BART)	10.52	6.54	$76,504,832	$123,122,593	$804,983,844
Niles/I-880 4A	Union City (BART) to Niles Junction	23.45	14.57	$2,359,136	$3,796,662	$55,321,742
Niles Junction to San Jose via Trimble (Structure)		**27.43**	**17.04**	**$66,893,831**	**$107,655,186**	**$1,834,964,679**
Niles/I-880 5A	Niles Junction to Niles Wye (S)	3.65	2.27	$45,726,749	$73,590,069	$166,902,634
Niles/I-880 5B	Niles Wye (S) to Warm Springs	8.45	5.25	$16,691,618	$26,862,555	$141,044,170
Niles/I-880 6	Warm Springs to Trimble Rd	2.33	1.45	$214,189,581	$344,704,717	$499,275,914
Niles/I-880 7B	Trimble Rd. Option (Structure)	8.00	4.97	$70,632,853	$113,672,558	$565,062,822
Caltrain 8	Santa Clara to Diridon Station	5.00	3.11	$92,535,828	$148,921,979	$462,679,139
Niles Junction to San Jose via Trimble (Tunnel)		**29.95**	**18.61**	**$65,132,060**	**$104,819,890**	**$1,950,900,589**
Niles/I-880 5A	Niles Junction to Niles Wye (S)	3.65	2.27	$45,726,749	$73,590,069	$166,902,634
Niles/I-880 5B	Niles Wye (S) to Warm Springs	8.45	5.25	$16,691,618	$26,862,555	$141,044,170
Niles/I-880 6	Warm Springs to Trimble Rd	2.33	1.45	$214,189,581	$344,704,717	$499,275,914
Niles/I-880 7B	Trimble Rd. Option (Tunnel)	10.52	6.54	$64,721,415	$104,159,021	$680,998,732
Caltrain 8	Santa Clara to Diridon Station	5.00	3.11	$92,535,828	$148,921,979	$462,679,139
Niles Junction to San Jose via I-880		**26.10**	**16.22**	**$48,553,043**	**$78,138,548**	**$1,267,234,412**
Niles/I-880 5A	Niles Junction to Niles Wye (S)	3.65	2.27	$45,726,749	$73,590,069	$166,902,634
Niles/I-880 5B	Niles Wye (S) to Warm Springs	8.45	5.25	$16,691,618	$26,862,555	$141,044,170
Niles/I-880 6	Warm Springs to Trimble Rd	2.33	1.45	$214,189,581	$344,704,717	$499,275,914
Niles/I-880 7A	I-880 - Trimble Rd. to Diridon	11.67	7.25	$39,421,689	$63,443,059	$460,011,694
Niles Junction to Altamont		**13.13**	**8.16**	**$55,263,716**	**$88,938,329**	**$725,723,114**
Niles/Dumbarton XN	Niles Junction to Niles Wye (S)	4.25	2.64	$35,018,018	$56,356,037	$148,966,648
Niles/Dumbarton XS	Niles Wye (S) to Warm Springs	8.88	5.52	$64,964,684	$104,550,525	$576,756,466
Station Options						
	West Oakland/7th Street					$611,197,055
	12th Street/City Center					$611,197,055
	Coliseum/Airport					$61,735,853
	Union City (Bart)					$69,853,070
	Union City (Shinn)					$310,150,400
	Fremont (Warm Springs)					$156,875,180
San Jose to Central Valley: Pacheco Pass						
Pacheco		**92.50**	**57.48**	**$38,800,727**	**$62,443,717**	**$3,589,067,255**
Pacheco 1	Diridon to Morgan Hill	32.50	20.19	$20,366,713	$32,777,047	$661,918,165
Pacheco 2	Morgan Hill to Gilroy	16.00	9.94	$23,730,117	$38,189,921	$379,681,864
Pacheco 3	Gilroy to San Luis Reservoir	44.00	27.34	$57,896,982	$93,176,161	$2,547,467,226
Henry Miller (UPRR Connection)		**100.89**	**62.69**	**$13,489,349**	**$21,709,003**	**$1,360,872,958**
Pacheco 4	San Luis Reservoir to Valley Floor	15.45	9.60	$27,554,846	$44,345,226	$425,722,369
HM-1	Western Valley to henry Miller UP Wye	58.05	36.07	$10,870,134	$17,493,785	$630,967,784
HM-2	Henry Miller UP North Wye to UP South Wye	8.19	5.09	$11,200,428	$18,025,342	$91,720,307
HM/UP-XN	Henry Miller Wye North to UPRR	11.25	6.99	$11,845,555	$19,063,573	$133,262,493
HM/UP-XS	Henry Miller Wye South to UPRR	7.95	4.94	$9,962,265	$16,032,711	$79,200,005
Henry Miller (BNSF Connection)		**104.70**	**65.06**	**$13,324,586**	**$21,443,843**	**$1,395,030,861**
Pacheco 4	San Luis Reservoir to Valley Floor	15.45	9.60	$27,554,846	$44,345,226	$425,722,369
HM-1	Western Valley to henry Miller UP Wye	58.05	36.07	$10,870,134	$17,493,785	$630,967,784
HM-2	Henry Miller UP North Wye to UP South Wye	8.19	5.09	$11,200,428	$18,025,342	$91,720,307
HM-3	Henry Miller UP South Wye to BNSF Wyes	4.62	2.87	$11,920,369	$19,183,975	$55,012,505
HM/BN-XN	Henry Miller Wye North to BNSF	8.70	5.40	$13,137,656	$21,143,007	$114,245,054
HM/BN-XS	Henry Miller Wye South to BNSF	9.70	6.03	$7,975,551	$12,835,405	$77,362,843
GEA North		**80.25**	**49.87**	**$16,775,455**	**$26,997,477**	**$1,346,230,241**
GEA-1	San Luis Reservoir to Atwater Wye	57.00	35.42	$12,172,226	$19,589,299	$693,816,870
GEA-BNSF XN	GEA Atwater Wye North to BNSF	12.15	7.55	$28,859,666	$46,445,131	$350,644,947
GEA-UPRR XS	GEA Atwater Wye South to Merced UP	11.10	6.90	$27,186,344	$43,752,180	$301,768,423
Station Options						
	San Jose (Diridon)					$185,051,790
	Morgan Hill (Caltrain)					$284,985,295
	Gilroy (Caltrain)					$148,256,045

Appendix 4-C
High-Speed Train Alignment Alternatives Capital Cost
Includes Contingencies and Program Implementation Cost

Alignment Option by Region and Segment		Segment Length		Avg Cost		Segment / Station Costs
		km	miles	$ / km	$ / mile	
East Bay to Central Valley: Altamont Pass						
I-680/580/UPRR		**49.43**	**30.71**	**$48,015,427**	**$77,273,339**	**$2,373,258,499**
UPRR-2A/2B	Niles Canyon to Sunol	6.27	3.90	$99,895,152	$160,765,663	$626,342,602
I-680/580/UPRR-1	Sunol to Dublin/Pleasanton BART	11.72	7.28	$43,125,032	$69,403,012	$505,382,254
I-680/580/UPRR-2	Dublin/Pleasanton BART to El Charo Road	4.09	2.54	$37,877,905	$60,958,579	$154,996,386
I-680/580/UPRR-3	El Charo Road to Livermore (I-580)	5.32	3.31	$37,708,288	$60,685,606	$200,608,090
I-680/580/UPRR-4	Livermore (I-580) to Greenville	8.11	5.04	$36,480,045	$58,708,941	$295,853,163
I-680/580/UPRR-5	Greenville to Altamont Pass	8.66	5.38	$61,995,084	$99,771,416	$536,567,450
UPRR-9	Altamont Pass to County Line	5.26	3.27	$10,170,795	$16,368,308	$53,508,554
I-580/UPRR		**43.96**	**27.32**	**$45,493,874**	**$73,215,293**	**$1,999,973,946**
UPRR-2A/2B	Niles Canyon to Sunol	6.27	3.90	$99,895,152	$160,765,663	$626,342,602
UPRR-3	Sunol to Pleasanton	3.30	2.05	$44,840,606	$72,163,960	$147,876,695
UPRR-4	Pleasanton to El Charo	2.59	1.61	$26,405,269	$42,495,161	$68,510,055
Pleasanton X	UPRR to I-580 Connector	4.45	2.77	$15,878,585	$25,554,105	$70,707,337
I-680/580/UPRR-3	El Charo Road to Livermore (I-580)	5.32	3.31	$37,708,288	$60,685,606	$200,608,090
I-680/580/UPRR-4	Livermore (I-580) to Greenville	8.11	5.04	$36,480,045	$58,708,941	$295,853,163
I-680/580/UPRR-5	Greenville to Altamont Pass	8.66	5.38	$61,995,084	$99,771,416	$536,567,450
UPRR-9	Altamont Pass to County Line	5.26	3.27	$10,170,795	$16,368,308	$53,508,554
Patterson Pass/UPRR		**41.19**	**25.60**	**$41,847,512**	**$67,347,043**	**$1,723,804,068**
UPRR-2A/2B	Niles Canyon to Sunol	6.27	3.90	$99,895,152	$160,765,663	$626,342,602
UPRR-3	Sunol to Pleasanton	3.30	2.05	$44,840,606	$72,163,960	$147,876,695
UPRR-4	Pleasanton to El Charo	2.59	1.61	$26,405,269	$42,495,161	$68,510,055
UPRR-5	El Charo to Livermore	6.41	3.98	$7,350,429	$11,829,368	$47,082,729
UPRR-6	Livermore to Patterson Pass cut off	3.55	2.21	$20,957,133	$33,727,236	$74,412,071
Patterson Pass	Patterson Pass	19.07	11.85	$39,822,791	$64,088,570	$759,579,915
UPRR		**41.62**	**25.86**	**$40,377,726**	**$64,981,651**	**$1,680,501,168**
UPRR-2A/2B	Niles Canyon to Sunol	6.27	3.90	$99,895,152	$160,765,663	$626,342,602
UPRR-3	Sunol to Pleasanton	3.30	2.05	$44,840,606	$72,163,960	$147,876,695
UPRR-4	Pleasanton to El Charo	2.59	1.61	$26,405,269	$42,495,161	$68,510,055
UPRR-5	El Charo to Livermore	6.41	3.98	$7,350,429	$11,829,368	$47,082,729
UPRR-6	Livermore to Patterson Pass cut off	3.55	2.21	$20,957,133	$33,727,236	$74,412,071
UPRR-7	Patterson Pass cut off to Greenville	2.99	1.86	$18,265,628	$29,395,678	$54,614,227
UPRR-8	Greenville to Altamont Pass	11.25	6.99	$54,058,154	$86,998,166	$608,154,234
UPRR-9	Altamont Pass to County Line	5.26	3.27	$10,170,795	$16,368,308	$53,508,554
Tracy Downtown (BNSF Connection)		**86.22**	**53.58**	**$17,787,134**	**$28,625,617**	**$1,533,677,808**
UPRR-10	County Line to Tracy Downtown	12.84	7.98	$23,802,574	$38,306,529	$305,553,641
UPRR-11	Tracy Downtown to I-205	7.34	4.56	$15,988,833	$25,731,533	$117,358,035
UPRR-12	I-205 to S. UPPRR	8.31	5.16	$14,955,715	$24,068,890	$124,281,993
UPRR-13	I-205 to Lathrop - Northern	13.14	8.16	$18,113,361	$29,150,629	$238,009,562
MC-1	Southwestern Manteca	1.46	0.91	$27,687,372	$44,558,506	$40,340,501
MC-2	Southeastern Manteca	1.83	1.14	$25,102,875	$40,399,161	$45,963,364
MC-5	Northern Escaton Wye to BNSF	4.30	2.67	$23,422,722	$37,695,217	$100,717,704
MC-6	Soutrn Escaton Wye to BNSF (part 1)	22.84	14.19	$8,972,327	$14,439,561	$204,945,893
MC-7	Soutrn Escaton Wye to BNSF (part 2)	14.17	8.80	$25,164,616	$40,498,524	$356,507,116
Tracy ACE Station (BNSF Connection)		**86.87**	**53.98**	**$18,877,113**	**$30,379,768**	**$1,639,835,922**
S UPRR-1	County Line to South of Tracy	2.09	1.30	$13,128,290	$21,127,935	$27,398,741
S UPRR-2	South of Tracy to Tracy ACE Station	15.51	9.64	$25,499,265	$41,037,089	$395,493,599
S UPRR-3	Tracy ACE Station to I-205	7.14	4.44	$11,856,678	$19,081,474	$84,656,684
S UPRR-4	I-205 to Southeast of Manteca	6.46	4.02	$15,269,787	$24,574,340	$98,673,364
S UPRR-5	I-205 to Lathrop - Southern	11.07	6.88	$25,750,831	$41,441,946	$285,138,957
MC-1	Southwestern Manteca	1.46	0.91	$27,687,372	$44,558,506	$40,340,501
MC-2	Southeastern Manteca	1.83	1.14	$25,102,875	$40,399,161	$45,963,364
MC-5	Northern Escaton Wye to BNSF	4.30	2.67	$23,422,722	$37,695,217	$100,717,704
MC-6	Soutrn Escaton Wye to BNSF (part 1)	22.84	14.19	$8,972,327	$14,439,561	$204,945,893
MC-7	Soutrn Escaton Wye to BNSF (part 2)	14.17	8.80	$25,164,616	$40,498,524	$356,507,116
Tracy ACE Station (UPRR Connection)		**47.93**	**29.78**	**$29,956,447**	**$48,210,228**	**$1,435,902,370**
S UPRR-1	County Line to South of Tracy	2.09	1.30	$13,128,290	$21,127,935	$27,398,741
S UPRR-2	South of Tracy to Tracy ACE Station	15.51	9.64	$25,499,265	$41,037,089	$395,493,599
S UPRR-3	Tracy ACE Station to I-205	7.14	4.44	$11,856,678	$19,081,474	$84,656,684
S UPRR-4	I-205 to Southeast of Manteca	6.46	4.02	$15,269,787	$24,574,340	$98,673,364
MC-1	Southwestern Manteca	1.46	0.91	$27,687,372	$44,558,506	$40,340,501
MC-2	Southeastern Manteca	1.83	1.14	$25,102,875	$40,399,161	$45,963,364
MC-3	Eastern Manteca UPRR South to BNSF	9.17	5.70	$74,962,364	$120,640,230	$687,254,951
MC-4	Manteca to Escaton Wye	4.28	2.66	$13,118,552	$21,112,263	$56,121,166
Tracy Downtown (UPRR Connection)		**58.36**	**36.26**	**$27,670,588**	**$44,531,495**	**$1,614,883,212**
UPRR-10	County Line to Tracy Downtown	12.84	7.98	$23,802,574	$38,306,529	$305,553,641
UPRR-11	Tracy Downtown to I-205	7.34	4.56	$15,988,833	$25,731,533	$117,358,035
UPRR-12	I-205 to S. UPPRR	8.31	5.16	$14,955,715	$24,068,890	$124,281,993
UPRR-13	I-205 to Lathrop - Northern	13.14	8.16	$18,113,361	$29,150,629	$238,009,562
MC-1	Southwestern Manteca	1.46	0.91	$27,687,372	$44,558,506	$40,340,501
MC-2	Southeastern Manteca	1.83	1.14	$25,102,875	$40,399,161	$45,963,364
MC-3	Eastern Manteca UPRR South to BNSF	9.17	5.70	$74,962,364	$120,640,230	$687,254,951
MC-4	Manteca to Escaton Wye	4.28	2.66	$13,118,552	$21,112,263	$56,121,166
East Bay Connections		**13.13**	**8.16**	**$55,263,716**	**$88,938,329**	**$725,723,114**
Dumbarton/Niles XN	Niles to Union City - Niles Wye (E) to Niles Wye (N)	4.25	2.64	$35,018,018	$56,356,037	$148,966,648
Dumbarton/Niles XS	Niles to Fremont - Niles Wye (E) to Niles Wye (S)	8.88	5.52	$64,964,684	$104,550,525	$576,756,466
Station Options						
	Pleasanton (I-680/Bernal Rd)					$72,639,578
	Pleasanton (BART)					$316,675,328
	Livermore (Downtown-At Grade)					$73,297,263
	Livermore (Downtown-Aerial)					$314,667,658
	Livermore (I-580)					$151,769,468
	Livermore (Greenville Road/UPRR)					$72,639,578
	Livermore (Greenville Road/I-580)					$160,180,913
	Tracy (Downtown)					$310,150,400
	Tracy (ACE)					$314,667,658

Appendix 4-C
High-Speed Train Alignment Alternatives Capital Cost
Includes Contingencies and Program Implementation Cost

Alignment Option by Region and Segment		Segment Length		Avg Cost		Segment / Station Costs
		km	miles	$ / km	$ / mile	
San Francisco Bay Crossings						
Trans Bay Crossing - Transbay Terminal		**11.71**	**7.28**	**$338,317,199**	**$544,468,754**	**$3,961,694,398**
TB-1	Transbay Transit Center tube to SF Bay	2.48	1.54	$252,855,279	$406,931,126	$627,081,091
TB-3	SF Bay to West Oakland	9.23	5.74	$361,279,882	$581,423,610	$3,334,613,307
Trans Bay Crossing - 4th & King		**11.06**	**6.87**	**$343,054,247**	**$552,092,294**	**$3,794,179,969**
TB-2	4th/Townsend tube to SF Bay	1.83	1.14	$251,129,323	$404,153,470	$459,566,662
TB-3	SF Bay to West Oakland	9.23	5.74	$361,279,882	$581,423,610	$3,334,613,307
Dumbarton (High Bridge)		**30.67**	**19.06**	**$63,990,228**	**$102,982,290**	**$1,962,452,322**
Dumbarton-XN	Dumbarton Wye North to Caltrain	2.20	1.37	$73,361,640	$118,064,116	$161,395,609
Dumbarton-XS	Dumbarton Wye South to Caltrain	0.96	0.60	$13,082,432	$21,054,134	$12,559,135
Dumbarton-1 (High Bridge)	Dumbarton Bay Crossing to Don Edwards	10.01	6.22	$88,615,763	$142,613,246	$886,866,552
Dumbarton-2 (High Bridge)	Dumbarton Bay Crossing to Don Edwards	13.00	8.08	$60,644,584	$97,597,998	$788,379,595
UPRR-1	Shinn to Niles Canyon	4.50	2.80	$25,166,985	$40,502,336	$113,251,431
Dumbarton (Low Bridge)		**32.21**	**20.01**	**$47,523,861**	**$76,482,241**	**$1,530,743,565**
Dumbarton-XN	Dumbarton Wye North to Caltrain	2.20	1.37	$73,361,640	$118,064,116	$161,395,609
Dumbarton-XS	Dumbarton Wye South to Caltrain	0.96	0.60	$13,082,432	$21,054,134	$12,559,135
Dumbarton-1 (Low Bridge)	Dumbarton Bay Crossing to Don Edwards	11.55	7.18	$53,574,758	$86,220,216	$618,788,460
Dumbarton-2 (Low Bridge)	Dumbarton Bay Crossing to Don Edwards	13.00	8.08	$48,057,610	$77,341,226	$624,748,930
UPRR-1	Shinn to Niles Canyon	4.50	2.80	$25,166,985	$40,502,336	$113,251,431
Dumbarton (Tube)		**30.67**	19.06	**$75,782,552**	**$121,960,196**	**$2,324,099,311**
Dumbarton-XN	Dumbarton Wye North to Caltrain	2.20	1.37	$73,361,640	$118,064,116	$161,395,609
Dumbarton-XS	Dumbarton Wye South to Caltrain	0.96	0.60	$13,082,432	$21,054,134	$12,559,135
Dumbarton-1 (Tube)	Dumbarton Bay Crossing to Don Edwards	10.01	6.22	$100,498,996	$161,737,456	$1,005,793,953
Dumbarton-2 (Tube)	Dumbarton Bay Crossing to Don Edwards	13.00	8.08	$79,315,322	$127,645,637	$1,031,099,183
UPRR-1	Shinn to Niles Canyon	4.50	2.80	$25,166,985	$40,502,336	$113,251,431
Fremont Central Park (High Bridge)		**32.36**	**20.11**	**$84,449,717**	**$135,908,645**	**$2,732,623,930**
Dumbarton-XN	Dumbarton Wye North to Caltrain	2.20	1.37	$73,361,640	$118,064,116	$161,395,609
Dumbarton-XS	Dumbarton Wye South to Caltrain	0.96	0.60	$13,082,432	$21,054,134	$12,559,135
Dumbarton-1 (High Bridge)	Dumbarton Bay Crossing to Don Edwards	10.01	6.22	$88,615,763	$142,613,246	$886,866,552
Fremont Central Park (High Bridge)	Fremont Central Park	19.19	11.92	$87,118,428	$140,203,519	$1,671,802,634
Fremont Central Park (Low Bridge)		**34.94**	**21.71**	**$64,246,458**	**$103,394,652**	**$2,244,771,247**
Dumbarton-XN	Dumbarton Wye North to Caltrain	2.20	1.37	$73,361,640	$118,064,116	$161,395,609
Dumbarton-XS	Dumbarton Wye South to Caltrain	0.96	0.60	$13,082,432	$21,054,134	$12,559,135
Dumbarton-1 (Low Bridge)	Dumbarton Bay Crossing to Don Edwards	11.55	7.18	$53,574,758	$86,220,216	$618,788,460
Fremont Central Park (Low Bridge)	Fremont Central Park	20.23	12.57	$71,775,978	$115,512,240	$1,452,028,043
Fremont Central Park (Tube)		**34.94**	**21.71**	**$88,556,605**	**$142,518,041**	**$3,093,990,660**
Dumbarton-XN	Dumbarton Wye North to Caltrain	2.20	1.37	$73,361,640	$118,064,116	$161,395,609
Dumbarton-XS	Dumbarton Wye South to Caltrain	0.96	0.60	$13,082,432	$21,054,134	$12,559,135
Dumbarton-1 (Tube)	Dumbarton Bay Crossing to Don Edwards	10.01	6.22	$100,498,996	$161,737,456	$1,005,793,953
Fremont Central Park (Tube)	Fremont Central Park	21.77	13.53	$87,930,269	$141,510,051	$1,914,241,964
Central Valley						
BNSF - UPRR		**149.65**	**92.99**	**$15,891,685**	**$25,575,188**	**$2,378,190,686**
BNSF N/S-1	North Stockton South to UPRR Connection	17.50	10.87	$8,362,619	$13,458,330	$146,345,827
BNSF N/S-2	BNSF Parallel to UPRR tracks	3.50	2.17	$8,090,264	$13,020,018	$28,315,925
BNSF N/S-3	Parallel tracks South through Escaton	13.55	8.42	$13,929,771	$22,417,794	$188,748,403
BNSF N/S-4	Escaton South to Amtrak Briggsmore	13.85	8.61	$18,871,199	$30,370,251	$261,366,107
BNSF N/S-5	Amtrak Briggsmore to UPRR/BNSF Connection	39.85	24.76	$15,645,491	$25,178,977	$623,472,816
BNSF N/S-6	UPRR/BNSF Connection to Atwater	6.30	3.91	$16,322,332	$26,268,248	$102,830,695
BNSF N/S-7	Atwater to Downtown Merced	17.00	10.56	$25,661,185	$41,297,674	$436,240,142
UPRR N/S-8	Merced South to BNSF Connection	4.75	2.95	$32,162,740	$51,760,913	$152,773,015
UPRR N/S-9	BNSF Connection South to Henry Miller Wye	17.45	10.84	$8,686,037	$13,978,822	$151,571,352
UPRR N/S-10	BNSF Henry Miller Wye	15.90	9.88	$18,020,529	$29,001,230	$286,526,405
BNSF		**161.55**	**100.38**	**$15,203,210**	**$24,467,194**	**$2,456,078,506**
BNSF N/S-1	North Stockton South to UPRR Connection	17.50	10.87	$8,362,619	$13,458,330	$146,345,827
BNSF N/S-2	BNSF Parallel to UPRR tracks	3.50	2.17	$8,090,264	$13,020,018	$28,315,925
BNSF N/S-3	Parallel tracks South through Escaton	13.55	8.42	$13,929,771	$22,417,794	$188,748,403
BNSF N/S-4	Escaton South to Amtrak Briggsmore	13.85	8.61	$18,871,199	$30,370,251	$261,366,107
BNSF N/S-5	Amtrak Briggsmore to UPRR/BNSF Connection	39.85	24.76	$15,645,491	$25,178,977	$623,472,816
BNSF N/S-6	UPRR/BNSF Connection to Atwater	6.30	3.91	$16,322,332	$26,268,248	$102,830,695
BNSF N/S-7	Atwater to Downtown Merced	17.00	10.56	$25,661,185	$41,297,674	$436,240,142
BNSF N/S-8	Merced South to UPRR Connection	8.00	4.97	$32,682,285	$52,597,039	$261,458,279
BNSF N/S-9	UPRR Connection East to Castle Connection	17.66	10.97	$9,825,892	$15,813,240	$173,495,771
BNSF N/S-10	Castle Connection to Henry Miller Wye	13.44	8.35	$10,838,922	$17,443,554	$145,707,628
BNSF N/S-11	Henry Miller Wye	10.90	6.77	$8,082,286	$13,007,178	$88,096,913
UPRR		**134.95**	**83.85**	**$18,862,722**	**$30,356,608**	**$2,545,524,294**
UPRR N/S-1	French Camp to Lathrop	8.00	4.97	$13,627,270	$21,930,965	$109,018,159
UPRR N/S-2	Lathrop through Manteca	8.70	5.41	$21,359,159	$34,374,234	$185,824,683
UPRR N/S-3	Manteca South to BNSF/UPRR	3.30	2.05	$7,761,402	$12,490,765	$25,612,626
UPRR N/S-4	BNSF?UPRR South to Modesto	18.50	11.50	$15,559,246	$25,040,179	$287,846,051
UPRR N/S-5a *	UPRR Modesto South - Western Option	4.20	2.61	$84,115,056	$135,370,061	$353,283,237
UPRR N/S-6	South Modesto to BNSF Connection	20.90	12.99	$21,150,677	$34,038,714	$442,049,140
UPRR N/S-7	BNSF Connection South to Merced	33.25	20.66	$16,572,019	$26,670,079	$551,019,624
UPRR N/S-8	Merced South to BNSF Connection	4.75	2.95	$32,162,740	$51,760,913	$152,773,015
UPRR N/S-9	BNSF Connection South to Henry Miller Wye	17.45	10.84	$8,686,037	$13,978,822	$151,571,352
UPRR N/S-10	BNSF Henry Miller Wye	15.90	9.88	$18,020,529	$29,001,230	$286,526,405

Appendix 4-C
High-Speed Train Alignment Alternatives Capital Cost
Includes Contingencies and Program Implementation Cost

Alignment Option by Region and Segment		Segment Length		Avg Cost		Segment / Station Costs
		km	miles	$ / km	$ / mile	
Central Valley						
BNSF Castle		**148.74**	**92.42**	**$14,323,359**	**$23,051,212**	**$2,130,413,453**
BNSF N/S-1	North Stockton South to UPRR Connection	17.50	10.87	$8,362,619	$13,458,330	$146,345,827
BNSF N/S-2	BNSF Parallel to UPRR tracks	3.50	2.17	$8,090,264	$13,020,018	$28,315,925
BNSF N/S-3	Parallel tracks South through Escaton	13.55	8.42	$13,929,771	$22,417,794	$188,748,403
BNSF N/S-4	Escaton South to Amtrak Briggsmore	13.85	8.61	$18,871,199	$30,370,251	$261,366,107
BNSF N/S-5	Amtrak Briggsmore to UPRR/BNSF Connection	39.85	24.76	$15,645,491	$25,178,977	$623,472,816
BNSF Castle-1	From BNSF Southeast to Castle AFB	17.60	10.94	$9,100,491	$14,645,821	$160,168,647
BNSF Castle-2	Castle AFB South to BNSF Connect	10.52	6.54	$22,904,277	$36,860,860	$240,998,798
BNSF Castle-3	BNSF South of Castle to UPRR Connecct	8.02	4.98	$30,814,309	$49,590,824	$247,192,389
BNSF N/S-10	Castle Connection to Henry Miller Wye	13.44	8.35	$10,838,922	$17,443,554	$145,707,628
BNSF N/S-11	Henry Miller Wye	10.90	6.77	$8,082,286	$13,007,178	$88,096,913
UPRR - BNSF Castle		**139.24**	**86.52**	**$17,417,257**	**$28,030,358**	**$2,425,126,621**
UPRR N/S-1	French Camp to Lathrop	8.00	4.97	$13,627,270	$21,930,965	$109,018,159
UPRR N/S-2	Lathrop through Manteca	8.70	5.41	$21,359,159	$34,374,234	$185,824,683
UPRR N/S-3	Manteca South to BNSF/UPRR	3.30	2.05	$7,761,402	$12,490,765	$25,612,626
UPRR N/S-4	BNSF?UPRR South to Modesto	18.50	11.50	$15,559,246	$25,040,179	$287,846,051
UPRR N/S-5a *	UPRR Modesto South - Western Option	4.20	2.61	$84,115,056	$135,370,061	$353,283,237
UPRR N/S-6	South Modesto to BNSF Connection	20.90	12.99	$21,150,677	$34,038,714	$442,049,140
UPRR-BNSF X-2	North South Connection East of Stockton (South Portion)	15.15	9.41	$9,196,591	$14,800,478	$139,328,349
BNSF Castle-1	From BNSF Southeast to Castle AFB	17.60	10.94	$9,100,491	$14,645,821	$160,168,647
BNSF Castle-2	Castle AFB South to BNSF Connect	10.52	6.54	$22,904,277	$36,860,860	$240,998,798
BNSF Castle-3	BNSF South of Castle to UPRR Connecct	8.02	4.98	$30,814,309	$49,590,824	$247,192,389
BNSF N/S-10	Castle Connection to Henry Miller Wye	13.44	8.35	$10,838,922	$17,443,554	$145,707,628
BNSF N/S-11	Henry Miller Wye	10.90	6.77	$8,082,286	$13,007,178	$88,096,913
UPRR - BNSF		**140.15**	**87.09**	**$19,071,736**	**$30,692,985**	**$2,672,903,854**
UPRR N/S-1	French Camp to Lathrop	8.00	4.97	$13,627,270	$21,930,965	$109,018,159
UPRR N/S-2	Lathrop through Manteca	8.70	5.41	$21,359,159	$34,374,234	$185,824,683
UPRR N/S-3	Manteca South to BNSF/UPRR	3.30	2.05	$7,761,402	$12,490,765	$25,612,626
UPRR N/S-4	BNSF?UPRR South to Modesto	18.50	11.50	$15,559,246	$25,040,179	$287,846,051
UPRR N/S-5a *	UPRR Modesto South - Western Option	4.20	2.61	$84,115,056	$135,370,061	$353,283,237
UPRR N/S-6	South Modesto to BNSF Connection	20.90	12.99	$21,150,677	$34,038,714	$442,049,140
UPRR-BNSF X-2	North South Connection East of Stockton (South Portion)	15.15	9.41	$9,196,591	$14,800,478	$139,328,349
BNSF N/S-6	UPRR/BNSF Connection to Atwater	6.30	3.91	$16,322,332	$26,268,248	$102,830,695
BNSF N/S-7	Atwater to Downtown Merced	17.00	10.56	$25,661,185	$41,297,674	$436,240,142
UPRR N/S-8	Merced South to BNSF Connection	4.75	2.95	$32,162,740	$51,760,913	$152,773,015
UPRR N/S-9	BNSF Connection South to Henry Miller Wye	17.45	10.84	$8,686,037	$13,978,822	$151,571,352
UPRR N/S-10	BNSF Henry Miller Wye	15.90	9.88	$18,020,529	$29,001,230	$286,526,405
Station Options						
	Modesto (Downtown)					$71,428,053
	Briggsmore (Amtrak)					$71,428,053
	Merced (Downtown)					$71,428,053
	Castle Air Force Base					$71,428,053

*** Option 5B more expensive by $26,806,470.**

High-Speed Train Alignment Alternatives

Caltrain Corridor Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Transbay Transit Center to 4th/Townsend		4th/Townsend to Millbrae/SFO	
	Alignment Cost			CALTRAIN 1		CALTRAIN 2	
	Track			Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		0.00		16.55	
1	Double Track Section - At Grade	km	$993,167	0.00	$0	15.45	$15,344,428
2	Double Track Section - On Structure	km	$1,878,243	0.00	$0	0.00	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	1.10	$2,066,067
	Single Track Section - Total	km		2.50		6.03	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	5.00	$4,695,606	12.06	$11,325,803
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	3	$22	773,238	$6,883,074
3	Fill	m3	$9	0	$0	271,492	$2,416,720
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	0.00	$0	19.95	$2,029,570
8	Special Drainage Facilities	5% of Earthwork			$1		$566,468
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	0.00	$0	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	6.03	$334,451,147
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	2.50	$240,618,204	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	1.10	$54,635,446
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	2.50	$4,828,405	6.03	$11,646,114
17	Retaining Walls	km	$4,399,945	0.00	$0	2.60	$11,439,858
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	8.00	$143,443,305
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.00	$0	0.00	$0
7	Major Utility Relocation - Suburban	km	$273,407	0.00	$0	0.00	$0
8	Major Utility Relocation - Undeveloped	km	$13,988	0.00	$0	0.00	$0
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	0.00	$0	0.00	$0
	Suburban	hectare	$479,081	0.00	$0	0.00	$0
	Undeveloped	hectare	$342,201	0.00	$0	0.000	$0
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$7,718,078		$19,818,578
	System Elements						
1	Signaling (ATC)	km	$845,654	2.50	$2,114,136	22.58	$19,094,873
2	Communications (w/Fiber Optic Backbone)	km	$699,413	2.50	$1,748,533	22.58	$15,792,752
3	Wayside Protection System	km	$67,144	2.50	$167,859	22.58	$1,516,104
	Electrification Items						
1	Traction Power Supply	km	$432,365	2.50	$1,080,911	22.58	$9,762,792
2	Traction Power Distribution	km	$806,233	2.50	$2,015,582	22.58	$18,204,736
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$67,571,771		$173,511,647
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$66,246,835		$170,109,458
	Total Construction				$257,269,261		$660,619,255
	Total Construction and Right of Way (Includes Environmental Mitigation)				$264,987,338		$680,437,832
	Grand Total				$398,805,944		$1,024,058,938

High-Speed Train Alignment Alternatives

Caltrain Corridor Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Millbrae/SFO to Redwood City		Redwood City to Caltrain	
Alignment Cost				CALTRAIN 3		CALTRAIN 4	
Track				**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		18.75		0.75	
1	Double Track Section - At Grade	km	$993,167	18.75	$18,621,879	0.75	$744,875
2	Double Track Section - On Structure	km	$1,878,243	0.00	$0	0.00	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	171,385	$1,525,605	0	$0
3	Fill	m3	$9	1,109,803	$9,879,049	78,315	$697,131
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	18.75	$1,907,491	0.75	$76,300
8	Special Drainage Facilities	5% of Earthwork			$665,607		$38,672
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	0.000	$0	0.000	$0
2	High Structure	km	$16,480,720	0.000	$0	0.000	$0
3	Long Span Structure	km	$37,577,568	0.000	$0	0.000	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.000	$0	0.000	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.000	$0	0.000	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.000	$0	0.000	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.000	$0	0.000	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.000	$0	0.000	$0
9	Double Track Drill & Blast	km	$83,740,573	0.000	$0	0.000	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.000	$0	0.000	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.000	$0	0.000	$0
12	Crossovers	ea	$94,803,899	0.000	$0	0.000	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.000	$0	0.000	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.000	$0	0.000	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.000	$0	0.000	$0
17	Retaining Walls	km	$4,399,945	10.150	$44,659,445	0.750	$3,299,959
18	Containment Walls	km	$1,500,559	0.000	$0	0.000	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.000	$0	0.000	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	18.00	$322,747,436	2.00	$35,860,826
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.00	$0	0.00	$0
7	Major Utility Relocation - Suburban	km	$273,407	0.00	$0	0.00	$0
8	Major Utility Relocation - Undeveloped	km	$13,988	0.00	$0	0.00	$0
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	0.00	$0	0.00	$0
	Suburban	hectare	$479,081	0.00	$0	0.00	$0
	Undeveloped	hectare	$342,201	0.00	$0	0.00	$0
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$13,603,775		$1,285,676
System Elements							
1	Signaling (ATC)	km	$845,654	18.75	$15,856,017	0.75	$634,241
2	Communications (w/Fiber Optic Backbone)	km	$699,413	18.75	$13,113,999	0.75	$524,560
3	Wayside Protection System	km	$67,144	18.75	$1,258,944	0.75	$50,358
Electrification Items							
1	Traction Power Supply	km	$432,365	18.75	$8,106,836	0.75	$324,273
2	Traction Power Distribution	km	$806,233	18.75	$15,116,864	0.75	$604,675
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$119,101,051		$11,256,094
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$116,765,736		$11,035,386
Total Construction					$453,459,171		$42,855,869
Total Construction and Right of Way (Includes Environmental Mitigation)					$467,062,946		$44,141,545
Grand Total					$702,929,734		$66,433,025

High-Speed Train Alignment Alternatives

Caltrain Corridor Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Caltrain Dumbarton Wye		Dumbarton Wye to Palo Alto	
Alignment Cost				CALTRAIN 5		CALTRAIN 6	
Track				Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		1.62		5.23	
1	Double Track Section - At Grade	km	$993,167	1.62	$1,609,923	5.23	$5,193,269
2	Double Track Section - On Structure	km	$1,878,243	0.00	$0	0.00	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	32,915	$292,997	27,240	$242,480
3	Fill	m3	$9	20,884	$185,902	417,680	$3,718,030
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	1.62	$164,909	5.23	$531,961
8	Special Drainage Facilities	5% of Earthwork			$32,190		$224,624
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	0.000	$0	0.000	$0
2	High Structure	km	$16,480,720	0.000	$0	0.000	$0
3	Long Span Structure	km	$37,577,568	0.000	$0	0.000	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.000	$0	0.000	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.000	$0	0.000	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.000	$0	0.000	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.000	$0	0.000	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.000	$0	0.000	$0
9	Double Track Drill & Blast	km	$83,740,573	0.000	$0	0.000	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.000	$0	0.000	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.000	$0	0.000	$0
12	Crossovers	ea	$94,803,899	0.000	$0	0.000	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.000	$0	0.000	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.000	$0	0.000	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.000	$0	0.000	$0
17	Retaining Walls	km	$4,399,945	0.200	$879,989	4.000	$17,599,781
18	Containment Walls	km	$1,500,559	0.000	$0	0.000	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.000	$0	0.000	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	1.00	$17,930,413	7.00	$125,512,892
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.00	$0	0.00	$0
7	Major Utility Relocation - Suburban	km	$273,407	0.00	$0	0.00	$0
8	Major Utility Relocation - Undeveloped	km	$13,988	0.00	$0	0.00	$0
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	0.00	$0	0.00	$0
	Suburban	hectare	$479,081	0.00	$0	0.00	$0
	Undeveloped	hectare	$342,201	0.00	$0	0.00	$0
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$771,525		$5,037,897
System Elements							
1	Signaling (ATC)	km	$845,654	1.62	$1,370,806	5.23	$4,421,926
2	Communications (w/Fiber Optic Backbone)	km	$699,413	1.62	$1,133,749	5.23	$3,657,232
3	Wayside Protection System	km	$67,144	1.62	$108,840	5.23	$351,094
Electrification Items							
1	Traction Power Supply	km	$432,365	1.62	$700,863	5.23	$2,260,834
2	Traction Power Distribution	km	$806,233	1.62	$1,306,903	5.23	$4,215,791
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$6,754,697		$44,106,792
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$6,622,252		$43,241,953
Total Construction					$25,717,484		$167,929,915
Total Construction and Right of Way (Includes Environmental Mitigation)					$26,489,009		$172,967,813
Grand Total					$39,865,958		$260,316,558

High-Speed Train Alignment Alternatives

Caltrain Corridor Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Palo Alto to Santa Clara		Santa Clara to Diridon Station	
Alignment Cost				CALTRAIN 7		CALTRAIN 8	
Track				Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		22.55		5.00	
1	Double Track Section - At Grade	km	$993,167	20.15	$20,012,312	0.15	$148,975
2	Double Track Section - On Structure	km	$1,878,243	0.00	$0	1.00	$1,878,243
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	1.00	$1,878,243	3.70	$6,949,497
4	Double Track Section - In Trench	km	$1,878,243	1.40	$2,629,540	0.15	$281,736
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	667,535	$5,942,145	373,996	$3,329,172
3	Fill	m3	$9	626,633	$5,578,051	1,143,150	$10,175,891
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	21.55	$2,192,343	1.35	$137,339
8	Special Drainage Facilities	5% of Earthwork			$685,627		$682,120
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	0.000	$0	0.000	$0
2	High Structure	km	$16,480,720	0.000	$0	1.000	$16,480,720
3	Long Span Structure	km	$37,577,568	0.000	$0	0.000	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.000	$0	0.000	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.000	$0	0.000	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.000	$0	0.000	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.000	$0	0.000	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.000	$0	0.000	$0
9	Double Track Drill & Blast	km	$83,740,573	0.000	$0	0.000	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.000	$0	0.000	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.000	$0	0.000	$0
12	Crossovers	ea	$94,803,899	0.000	$0	0.000	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	1.000	$48,123,641	3.700	$178,057,471
14	Trench Short	km	$49,668,587	1.40	$69,536,022	0.15	$7,450,288
15	Trench Long	km	$39,272,836	0.000	$0	0.000	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	1.000	$1,931,362	3.700	$7,146,040
17	Retaining Walls	km	$4,399,945	7.500	$32,999,590	0.000	$0
18	Containment Walls	km	$1,500,559	0.000	$0	0.000	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.000	$0	0.000	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	3.00	$51,502,250
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	7.00	$125,512,892	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.00	$0	0.00	$0
7	Major Utility Relocation - Suburban	km	$273,407	0.00	$0	0.00	$0
8	Major Utility Relocation - Undeveloped	km	$13,988	0.00	$0	0.00	$0
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	0.00	$0	0.00	$0
	Suburban	hectare	$479,081	0.00	$0	0.00	$0
	Undeveloped	hectare	$342,201	0.00	$0	0.00	$0
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$11,439,225		$8,954,214
System Elements							
1	Signaling (ATC)	km	$845,654	22.55	$19,069,503	5.00	$4,228,271
2	Communications (w/Fiber Optic Backbone)	km	$699,413	22.55	$15,771,769	5.00	$3,497,066
3	Wayside Protection System	km	$67,144	22.55	$1,514,090	5.00	$335,718
Electrification Items							
1	Traction Power Supply	km	$432,365	22.55	$9,749,821	5.00	$2,161,823
2	Traction Power Distribution	km	$806,233	22.55	$18,180,549	5.00	$4,031,164
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$100,150,415		$78,394,140
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$98,186,681		$76,857,000
Total Construction					$381,307,499		$298,473,786
Total Construction and Right of Way (Includes Environmental Mitigation)					$392,746,724		$307,427,999
Grand Total					$591,083,820		$462,679,139

High-Speed Train Alignment Alternatives

Niles Sub_I-880 Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				West Oakland to Jack London Square		12th Street/City Center to Jack London Square	
	Alignment Cost			Niles/I-880 1A		Niles/I-880 1B	
	Track			Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		2.67		4.40	
1	Double Track Section - At Grade	km	$993,167	1.75	$1,738,042	1.15	$1,142,142
2	Double Track Section - On Structure	km	$1,878,243	0.00	$0	0.00	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.52	$976,686	2.85	$5,352,991
4	Double Track Section - In Trench	km	$1,878,243	0.40	$751,297	0.40	$751,297
	Single Track Section - Total	km		4.05		0.70	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	8.10	$7,606,882	1.40	$1,314,770
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	0	$0	0	$0
3	Fill	m3	$9	0	$0	0	$0
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	0.00	$0	0.00	$0
8	Special Drainage Facilities	5% of Earthwork			$0		$0
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	0.00	$0	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	4.05	$224,631,368	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.70	$67,373,097
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.52	$25,024,293	2.85	$137,152,376
14	Trench Short	km	$49,668,587	0.40	$19,867,435	0.40	$19,867,435
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	4.57	$8,826,325	3.55	$6,856,336
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	5.22	$3,551,366	4.08	$2,775,781
7	Major Utility Relocation - Suburban	km	$273,407	0.79	$215,718	1.02	$278,875
8	Major Utility Relocation - Undeveloped	km	$13,988	0.06	$849	0.00	$0
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	7.94	$21,736,609	6.20	$16,973,171
	Suburban	hectare	$479,081	1.20	$574,898	1.55	$742,576
	Undeveloped	hectare	$342,201	0.09	$30,798	0.00	$0
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$9,370,431		$7,722,127
	System Elements						
1	Signaling (ATC)	km	$845,654	6.72	$5,682,796	5.10	$4,312,837
2	Communications (w/Fiber Optic Backbone)	km	$699,413	6.72	$4,700,057	5.10	$3,567,008
3	Wayside Protection System	km	$67,144	6.72	$451,205	5.10	$342,433
	Electrification Items						
1	Traction Power Supply	km	$432,365	6.72	$2,905,490	5.10	$2,205,059
2	Traction Power Distribution	km	$806,233	6.72	$5,417,884	5.10	$4,111,787
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$87,735,410		$72,124,735
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$86,015,108		$70,710,524
	Total Construction				$312,347,695		$257,404,223
	Total Construction and Right of Way (Includes Environmental Mitigation)				$344,060,431		$282,842,097
	Grand Total				$517,810,948		$425,677,356

High-Speed Train Alignment Alternatives

Niles Sub_I-880 Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Jack London Square to Oakland Coliseum		Oakland Coliseum to Union City (BART)	
	Alignment Cost			Niles/I-880 2		Niles/I-880 3A	
	Track			**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		3.95		24.05	
1	Double Track Section - At Grade	km	$993,167	3.95	$3,923,009	23.55	$23,389,079
2	Double Track Section - On Structure	km	$1,878,243	0.00	$0	0.50	$939,121
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	0	$0	155,297	$1,382,395
3	Fill	m3	$9	0	$0	155,297	$1,382,395
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	0.00	$0	20.40	$2,075,350
8	Special Drainage Facilities	5% of Earthwork			$0		$242,007
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	0.00	$0	0.50	$6,866,967
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	6.00	$107,582,479	18.00	$322,747,436
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	3.67	$2,496,842	18.28	$12,436,585
7	Major Utility Relocation - Suburban	km	$273,407	0.28	$76,554	5.29	$1,446,323
8	Major Utility Relocation - Undeveloped	km	$13,988	0.00	$0	0.48	$6,714
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	5.58	$15,284,067	27.78	$76,050,757
	Suburban	hectare	$479,081	0.42	$201,214	8.04	$3,851,814
	Undeveloped	hectare	$342,201	0.00	$0	0.73	$249,807
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$3,760,187		$13,244,290
	System Elements						
1	Signaling (ATC)	km	$845,654	3.95	$3,340,334	24.05	$20,337,984
2	Communications (w/Fiber Optic Backbone)	km	$699,413	3.95	$2,762,682	24.05	$16,820,889
3	Wayside Protection System	km	$67,144	3.95	$265,218	24.05	$1,614,805
	Electrification Items						
1	Traction Power Supply	km	$432,365	3.95	$1,707,840	24.05	$10,398,368
2	Traction Power Distribution	km	$806,233	3.95	$3,184,619	24.05	$19,389,898
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$36,869,187		$136,392,611
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$36,146,261		$133,718,247
	Total Construction				$125,339,577		$441,476,319
	Total Construction and Right of Way (Includes Environmental Mitigation)				$144,585,045		$534,872,986
	Grand Total				$217,600,493		$804,983,844

High-Speed Train Alignment Alternatives

Niles Sub_I-880 Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Union City (BART) to Niles Junction		Niles Junction to Niles Wye (S)	
Alignment Cost				Niles/I-880 4A		Niles/I-880 5A	
Track				**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		3.33		7.31	
1	Double Track Section - At Grade	km	$993,167	3.33	$3,308,239	5.52	$5,481,288
2	Double Track Section - On Structure	km	$1,878,243	0.00	$0	1.79	$3,363,932
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	21,945	$195,346	36,574	$325,568
3	Fill	m3	$9	21,945	$195,346	36,574	$325,568
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	3.30	$335,718	5.50	$559,531
8	Special Drainage Facilities	5% of Earthwork			$36,321		$60,533
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	0.00	$0	1.79	$24,597,475
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	2.00	$13,733,933	5.00	$34,334,834
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	1.37	$932,064	2.96	$2,013,802
7	Major Utility Relocation - Suburban	km	$273,407	1.96	$535,878	3.44	$940,520
8	Major Utility Relocation - Undeveloped	km	$13,988	0.00	$0	0.90	$12,589
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	2.08	$5,694,225	4.49	$12,291,861
	Suburban	hectare	$479,081	2.99	$1,432,453	5.22	$2,500,805
	Undeveloped	hectare	$342,201	0.00	$0	1.36	$465,393
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$863,067		$2,785,652
System Elements							
1	Signaling (ATC)	km	$845,654	3.33	$2,816,874	7.31	$6,181,732
2	Communications (w/Fiber Optic Backbone)	km	$699,413	3.33	$2,329,746	7.31	$5,112,711
3	Wayside Protection System	km	$67,144	3.33	$223,656	7.31	$490,820
Electrification Items							
1	Traction Power Supply	km	$432,365	3.33	$1,440,206	7.31	$3,160,585
2	Traction Power Distribution	km	$806,233	3.33	$2,685,561	7.31	$5,893,561
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$9,373,451		$28,279,184
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$9,189,658		$27,724,690
Total Construction					$28,768,888		$92,855,050
Total Construction and Right of Way (Includes Environmental Mitigation)					$36,758,633		$110,898,760
Grand Total					$55,321,742		$166,902,634

High-Speed Train Alignment Alternatives

Niles Sub_I-880 Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Niles Wye (S) to Warm Springs		Warm Springs to Trimble Rd.	
Alignment Cost				Niles/I-880 5B		Niles/I-880 6	
Track				**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		2.33		11.67	
1	Double Track Section - At Grade	km	$993,167	0.00	$0	0.00	$0
2	Double Track Section - On Structure	km	$1,878,243	2.33	$4,378,183	11.67	$21,917,212
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	0	$0	0	$0
3	Fill	m3	$9	0	$0	0	$0
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	0.00	$0	0.00	$0
8	Special Drainage Facilities	5% of Earthwork			$0		$0
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	0.00	$0	0.00	$0
2	High Structure	km	$16,480,720	2.33	$38,416,559	11.67	$192,313,523
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	2.00	$35,860,826	2.00	$35,860,826
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.94	$639,518	7.43	$5,054,914
7	Major Utility Relocation - Suburban	km	$273,407	1.10	$300,748	3.10	$847,562
8	Major Utility Relocation - Undeveloped	km	$13,988	0.29	$4,057	1.15	$16,087
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	1.44	$3,942,156	11.30	$30,934,973
	Suburban	hectare	$479,081	1.66	$795,275	4.71	$2,256,473
	Undeveloped	hectare	$342,201	0.43	$147,146	1.75	$598,852
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$2,587,354		$8,678,286
System Elements							
1	Signaling (ATC)	km	$845,654	2.33	$1,971,220	11.67	$9,867,939
2	Communications (w/Fiber Optic Backbone)	km	$699,413	2.33	$1,630,332	11.67	$8,161,454
3	Wayside Protection System	km	$67,144	2.33	$156,512	11.67	$783,500
Electrification Items							
1	Traction Power Supply	km	$432,365	2.33	$1,007,842	11.67	$5,045,262
2	Traction Power Distribution	km	$806,233	2.33	$1,879,329	11.67	$9,407,930
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$23,897,849		$84,594,922
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$23,429,264		$82,936,198
Total Construction					$86,245,125		$289,276,209
Total Construction and Right of Way (Includes Environmental Mitigation)					$93,717,056		$331,744,793
Grand Total					$141,044,170		$499,275,914

High-Speed Train Alignment Alternatives

Niles Sub_I-880 Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				I-880 - Trimble Rd. to Diridon		Trimble Rd. Option (Structure)	
	Alignment Cost			Niles/I-880 7A		Niles/I-880 7B (Opt. A)	
	Track			Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		8.00		10.52	
1	Double Track Section - At Grade	km	$993,167	0.50	$496,583	0.65	$645,558
2	Double Track Section - On Structure	km	$1,878,243	6.10	$11,457,280	6.68	$12,550,417
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.70	$1,314,770	2.62	$4,911,604
4	Double Track Section - In Trench	km	$1,878,243	0.70	$1,314,770	0.58	$1,079,989
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	0	$0	21,780	$193,877
3	Fill	m3	$9	0	$0	58,520	$520,923
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	0.00	$0	0.00	$0
8	Special Drainage Facilities	5% of Earthwork			$0		$35,740
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	0.00	$0	0.00	$0
2	High Structure	km	$16,480,720	6.10	$100,532,393	6.68	$110,091,211
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.70	$33,686,549	2.62	$126,083,939
14	Trench Short	km	$49,668,587	0.70	$34,768,011	0.58	$28,559,438
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.70	$1,351,953	2.62	$5,060,169
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	2.00	$34,334,834	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	1.00	$17,930,413	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	7.72	$5,252,212	9.36	$6,369,872
7	Major Utility Relocation - Suburban	km	$273,407	0.31	$84,756	0.00	$0
8	Major Utility Relocation - Undeveloped	km	$13,988	0.00	$0	1.16	$16,187
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	11.74	$32,139,521	14.23	$38,956,165
	Suburban	hectare	$479,081	0.47	$225,168	0.00	$0
	Undeveloped	hectare	$342,201	0.00	$0	1.76	$602,274
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$7,959,930		$9,783,454
	System Elements						
1	Signaling (ATC)	km	$845,654	8.00	$6,765,234	10.52	$8,897,974
2	Communications (w/Fiber Optic Backbone)	km	$699,413	8.00	$5,595,306	10.52	$7,359,227
3	Wayside Protection System	km	$67,144	8.00	$537,149	10.52	$706,486
	Electrification Items						
1	Traction Power Supply	km	$432,365	8.00	$3,458,917	10.52	$4,549,340
2	Traction Power Distribution	km	$806,233	8.00	$6,449,862	10.52	$8,483,181
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$77,942,181		$95,741,541
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$76,413,903		$93,864,256
	Total Construction				$265,330,992		$326,115,132
	Total Construction and Right of Way (Includes Environmental Mitigation)				$305,655,610		$375,457,025
	Grand Total				$460,011,694		$565,062,822

High-Speed Train Alignment Alternatives

Niles Sub_I-880 Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES	
				Trimble Rd. Option (Tunnel)	
Alignment Cost				Niles/I-880 7B (Opt. B)	
Track				**Quantities**	**Item Cost**
	Double Track Section-Total	km		10.52	
1	Double Track Section - At Grade	km	$993,167	0.34	$332,711
2	Double Track Section - On Structure	km	$1,878,243	4.92	$9,235,319
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	4.92	$9,231,562
4	Double Track Section - In Trench	km	$1,878,243	0.36	$666,776
	Single Track Section - Total	km		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0
Earthwork and Related Items					
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0
2	Cut	m3	$9	4,230	$37,654
3	Fill	m3	$9	3,300	$29,375
4	Borrow	m3	$13.35	0.00	$0
5	Spoil	m3	$0.00	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	0.00	$0
8	Special Drainage Facilities	5% of Earthwork			$3,351
Structures/Tunnels/Walls					
1	Standard Structure	km	$13,733,933	0.00	$0
2	High Structure	km	$16,480,720	4.92	$81,085,143
3	Long Span Structure	km	$37,577,568	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	4.92	$236,768,313
14	Trench Short	km	$49,668,587	0.36	$17,632,348
15	Trench Long	km	$39,272,836	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	4.92	$9,502,302
17	Retaining Walls	km	$4,399,945	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0
Grade Separations					
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0
Rail and Utility Relocation					
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	9.36	$6,367,967
7	Major Utility Relocation - Suburban	km	$273,407	0.00	$0
8	Major Utility Relocation - Undeveloped	km	$13,988	1.16	$16,226
Right-of-Way					
1	Right-of-Way Required for Each Segment				
	Urban	hectare	$2,737,608	14.23	$38,956,165
	Suburban	hectare	$479,081	0.00	$0
	Undeveloped	hectare	$342,201	1.76	$602,274
Environmental Mitigation					
	Environmental Mitigation	3% of Line Cost			$12,027,158
System Elements					
1	Signaling (ATC)	km	$845,654	10.52	$8,897,974
2	Communications (w/Fiber Optic Backbone)	km	$699,413	10.52	$7,359,227
3	Wayside Protection System	km	$67,144	10.52	$706,486
Electrification Items					
1	Traction Power Supply	km	$432,365	10.52	$4,549,340
2	Traction Power Distribution	km	$806,233	10.52	$8,483,181
Program Implementation Costs (PER SCREENING)					
	Program Implementation Costs	25.5% of Total Cost & Procurement			$115,385,167
Contingencies (PER SCREENING)					
	Contingencies	25% of Total Construction Cost			$113,122,713
Total Construction					$400,905,255
Total Construction and Right of Way (Includes Environmental Mitigation)					$452,490,852
Grand Total					$680,998,732

High-Speed Train Alignment Alternatives

San Jose to Central Valley Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Diridon to Morgan Hill		Morgan Hill to Gilroy	
Alignment Cost				Pacheco-1		Pacheco-2	
Track				**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		32.50		16.00	
1	Double Track Section - At Grade	km	$993,167	27.450	$27,262,430	9.900	$9,832,352
2	Double Track Section - On Structure	km	$1,878,243	5.050	$9,485,125	6.100	$11,457,280
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.000	$0	0.000	$0
4	Double Track Section - In Trench	km	$1,878,243	0.000	$0	0.000	$0
	Single Track Section - Total	km		0.000		0.000	
5	Single Track Section - At Grade	km	$496,583	0.000	$0	0.000	$0
6	Single Track Section - On Structure	km	$939,121	0.000	$0	0.000	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.000	$0	0.000	$0
8	Single Track Section - In Trench	km	$939,121	0.000	$0	0.000	$0
9	Freight Double Track - At Grade	km	$993,167	0.000	$0	0.000	$0
10	Freight Single Track - At Grade	km	$496,583	0.000	$0	0.000	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	237,380	$2,113,067	46,480	$413,747
3	Fill	m3	$9	0	$0	141,345	$1,258,196
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	27.55	$2,802,740	9.90	$1,007,155
8	Special Drainage Facilities	5% of Earthwork			$245,790		$133,955
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	0.95	$13,047,237	6.10	$83,776,994
2	High Structure	km	$16,480,720	4.10	$67,570,953	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	1.20	$5,279,934	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	3.00	$53,791,239	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	11.00	$75,536,634	9.00	$61,802,701
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	13.33	$9,065,509	4.64	$3,156,770
7	Major Utility Relocation - Suburban	km	$273,407	9.43	$2,576,861	4.00	$1,093,628
8	Major Utility Relocation - Undeveloped	km	$13,988	9.75	$136,386	7.36	$102,954
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	20.26	$55,463,943	7.05	$19,300,138
	Suburban	hectare	$479,081	14.33	$6,865,236	6.08	$2,912,815
	Undeveloped	hectare	$342,201	14.82	$5,071,418	11.19	$3,829,229
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$10,846,955		$6,589,460
System Elements							
1	Signaling (ATC)	km	$845,654	32.50	$27,483,763	16.00	$13,530,468
2	Communications (w/Fiber Optic Backbone)	km	$699,413	32.50	$22,730,932	16.00	$11,190,612
3	Wayside Protection System	km	$67,144	32.50	$2,182,169	16.00	$1,074,299
Electrification Items							
1	Traction Power Supply	km	$432,365	32.50	$14,051,849	16.00	$6,917,833
2	Traction Power Distribution	km	$806,233	32.50	$26,202,565	16.00	$12,899,724
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$112,152,247		$64,331,479
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$109,953,184		$63,070,077
Total Construction					$361,565,182		$219,648,667
Total Construction and Right of Way (Includes Environmental Mitigation)					$439,812,734		$252,280,309
Grand Total					$661,918,165		$379,681,864

High-Speed Train Alignment Alternatives

San Jose to Central Valley Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Gilroy to San Luis Reservoir		San Luis Reservoir to Valley Floor	
	Alignment Cost			Pacheco-3		Pacheco-4	
	Track			**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		44.00		15.45	
1	Double Track Section - At Grade	km	$993,167	24.350	$24,183,613	15.450	$15,344,428
2	Double Track Section - On Structure	km	$1,878,243	3.500	$6,573,849	0.000	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	16.150	$30,333,617	0.000	$0
4	Double Track Section - In Trench	km	$1,878,243	0.000	$0	0.000	$0
	Single Track Section - Total	km		0.000		0.000	
5	Single Track Section - At Grade	km	$496,583	0.000	$0	0.000	$0
6	Single Track Section - On Structure	km	$939,121	0.000	$0	0.000	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.000	$0	0.000	$0
8	Single Track Section - In Trench	km	$939,121	0.000	$0	0.000	$0
9	Freight Double Track - At Grade	km	$993,167	0.000	$0	0.000	$0
10	Freight Single Track - At Grade	km	$496,583	0.000	$0	0.000	$0
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	30,335,213	$270,032,642	16,308,730	$145,174,178
3	Fill	m3	$9	11,652,418	$103,725,436	5,129,485	$45,660,743
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	24.35	$2,477,195	15.45	$1,571,772
8	Special Drainage Facilities	5% of Earthwork			$18,811,764		$9,620,335
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	0.45	$6,180,270	0.00	$0
2	High Structure	km	$16,480,720	3.05	$50,266,196	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.10	$2,887,673
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.10	$2,311,923
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	16.15	$895,752,244	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	16.15	$31,191,498	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	4.00	$27,467,867	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	6.00	$6,943,266	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	4.84	$3,292,838	0.00	$0
7	Major Utility Relocation - Suburban	km	$273,407	1.76	$481,196	0.00	$0
8	Major Utility Relocation - Undeveloped	km	$13,988	37.40	$523,161	15.45	$216,119
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	7.36	$20,148,797	0.00	$0
	Suburban	hectare	$479,081	2.68	$1,283,938	0.00	$0
	Undeveloped	hectare	$342,201	56.85	$19,454,125	23.48	$8,034,879
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$48,110,167		$8,004,965
	System Elements						
1	Signaling (ATC)	km	$845,654	44.00	$37,208,786	15.45	$13,065,358
2	Communications (w/Fiber Optic Backbone)	km	$699,413	44.00	$30,774,184	15.45	$10,805,935
3	Wayside Protection System	km	$67,144	44.00	$2,954,322	15.45	$1,037,370
	Electrification Items						
1	Traction Power Supply	km	$432,365	44.00	$19,024,041	15.45	$6,680,033
2	Traction Power Distribution	km	$806,233	44.00	$35,474,241	15.45	$12,456,296
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$431,630,660		$72,132,362
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$423,167,313		$70,718,001
	Total Construction				$1,603,672,227		$266,832,163
	Total Construction and Right of Way (Includes Environmental Mitigation)				$1,692,669,253		$282,872,006
	Grand Total				$2,547,467,226		$425,722,369

High-Speed Train Alignment Alternatives

San Jose to Central Valley Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Western Valley to Henry Miller UP Wye		Henry Miller UPR North Wye to UP South Wye	
	Alignment Cost			HM-1		HM-2	
	Track			Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		58.05		8.19	
1	Double Track Section - At Grade	km	$993,167	52.90	$52,534,554	7.99	$7,934,410
2	Double Track Section - On Structure	km	$1,878,243	5.15	$9,672,949	0.20	$375,649
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Structure	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	1,192,739	$10,617,314	150,980	$1,343,964
3	Fill	m3	$9	1,192,739	$10,617,314	150,980	$1,343,964
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	52.90	$5,381,260	8.00	$813,863
8	Special Drainage Facilities	5% of Earthwork			$1,330,794		$175,090
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	5.15	$70,729,757	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.60	$17,326,041	0.20	$5,775,347
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.05	$1,155,961	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	1.00	$6,866,967
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	25.00	$28,930,276	6.00	$6,943,266
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.72	$489,844	0.00	$0
7	Major Utility Relocation - Suburban	km	$273,407	0.05	$13,670	0.00	$0
8	Major Utility Relocation - Undeveloped	km	$13,988	57.47	$803,906	8.19	$114,564
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	1.09	$2,983,993	0.00	$0
	Suburban	hectare	$479,081	0.08	$38,327	0.00	$0
	Undeveloped	hectare	$342,201	87.35	$29,891,254	12.45	$4,260,402
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$11,252,450		$1,650,971
	System Elements						
1	Signaling (ATC)	km	$845,654	58.05	$49,086,846	8.19	$6,925,063
2	Communications (w/Fiber Optic Backbone)	km	$699,413	58.05	$40,598,143	8.19	$5,727,495
3	Wayside Protection System	km	$67,144	58.05	$3,897,422	8.19	$549,840
	Electrification Items						
1	Traction Power Supply	km	$432,365	58.05	$25,097,034	8.19	$3,540,633
2	Traction Power Distribution	km	$806,233	58.05	$46,798,587	8.19	$6,602,240
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$106,908,163		$15,540,650
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$104,811,924		$15,235,931
	Total Construction				$375,081,673		$55,032,353
	Total Construction and Right of Way (Includes Environmental Mitigation)				$419,247,697		$60,943,726
	Grand Total				$630,967,784		$91,720,307

High-Speed Train Alignment Alternatives

San Jose to Central Valley Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Henry Miller UP South Wye to BNSF Wyes		Henry Miller Wye North to BNSF	
	Alignment Cost			HM-3		HM/BN-XN	
	Track			Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		4.62		8.70	
1	Double Track Section - At Grade	km	$993,167	4.42	$4,384,832	8.50	$8,437,946
2	Double Track Section - On Structure	km	$1,878,243	0.20	$375,649	0.20	$375,649
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Structure	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	75,490	$671,982	1,236,391	$11,005,885
3	Fill	m3	$9	75,490	$671,982	1,236,391	$11,005,885
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	4.42	$449,150	8.50	$864,322
8	Special Drainage Facilities	5% of Earthwork			$89,656		$1,143,805
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	0.00	$0	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.30	$8,663,020	0.20	$5,775,347
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	4.00	$4,628,844	5.00	$5,786,055
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.00	$0	0.00	$0
7	Major Utility Relocation - Suburban	km	$273,407	0.00	$0	0.00	$0
8	Major Utility Relocation - Undeveloped	km	$13,988	4.62	$64,626	8.70	$121,698
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	0.00	$0	0.00	$0
	Suburban	hectare	$479,081	0.00	$0	0.00	$0
	Undeveloped	hectare	$342,201	7.02	$2,402,251	13.22	$4,523,897
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$994,687		$2,079,217
	System Elements						
1	Signaling (ATC)	km	$845,654	4.62	$3,902,694	8.70	$7,353,809
2	Communications (w/Fiber Optic Backbone)	km	$699,413	4.62	$3,227,792	8.70	$6,082,098
3	Wayside Protection System	km	$67,144	4.62	$309,868	8.70	$583,881
	Electrification Items						
1	Traction Power Supply	km	$432,365	4.62	$1,995,362	8.70	$3,759,842
2	Traction Power Distribution	km	$806,233	4.62	$3,720,764	8.70	$7,011,000
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$9,321,056		$19,357,135
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$9,138,290		$18,977,584
	Total Construction				$33,156,222		$69,307,221
	Total Construction and Right of Way (Includes Environmental Mitigation)				$36,553,159		$75,910,335
	Grand Total				$55,012,505		$114,245,054

High-Speed Train Alignment Alternatives

San Jose to Central Valley Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Henry Miller Wye South to BNSF		Henry Miller Wye South to UPRR	
	Alignment Cost			HM/BN-XS		HM/UP-XS	
	Track			Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		9.70		7.95	
1	Double Track Section - At Grade	km	$993,167	9.70	$9,633,718	7.75	$7,697,043
2	Double Track Section - On Structure	km	$1,878,243	0.00	$0	0.20	$375,649
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Structure	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	90,588	$806,378	93,533	$832,596
3	Fill	m3	$9	90,588	$806,378	72,120	$641,985
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	9.70	$986,809	7.55	$768,083
8	Special Drainage Facilities	5% of Earthwork			$129,978		$112,133
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	0.00	$0	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.20	$5,775,347
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	4.00	$4,628,844	7.00	$8,100,477
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.00	$0	0.00	$0
7	Major Utility Relocation - Suburban	km	$273,407	0.49	$133,969	0.00	$0
8	Major Utility Relocation - Undeveloped	km	$13,988	9.22	$128,972	7.95	$111,207
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	0.00	$0	0.00	$0
	Suburban	hectare	$479,081	0.74	$354,520	0.00	$0
	Undeveloped	hectare	$342,201	14.01	$4,794,235	12.08	$4,133,788
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$1,347,237		$1,412,353
	System Elements						
1	Signaling (ATC)	km	$845,654	9.70	$8,202,846	7.95	$6,722,951
2	Communications (w/Fiber Optic Backbone)	km	$699,413	9.70	$6,784,309	7.95	$5,560,336
3	Wayside Protection System	km	$67,144	9.70	$651,294	7.95	$533,792
	Electrification Items						
1	Traction Power Supply	km	$432,365	9.70	$4,193,936	7.95	$3,437,298
2	Traction Power Distribution	km	$806,233	9.70	$7,820,458	7.95	$6,409,550
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$13,107,990		$13,419,270
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$12,850,971		$13,156,147
	Total Construction				$44,907,890		$47,078,447
	Total Construction and Right of Way (Includes Environmental Mitigation)				$51,403,882		$52,624,588
	Grand Total				$77,362,843		$79,200,005

High-Speed Train Alignment Alternatives

San Jose to Central Valley Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Hnery Miller Wye North to UPRR		San Luis Reservoir to Atwater Wye	
	Alignment Cost			HM/UP-XN		GEA-1	
	Track			Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		11.25		57.00	
1	Double Track Section - At Grade	km	$993,167	10.45	$10,378,594	51.45	$51,098,435
2	Double Track Section - On Structure	km	$1,878,243	0.80	$1,502,594	2.15	$4,038,222
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	3.40	$6,386,025
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Structure	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	65,177	$580,181	8,084,648	$71,966,493
3	Fill	m3	$9	99,970	$889,895	3,942,381	$35,093,591
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	10.45	$1,063,108	1.70	$172,946
8	Special Drainage Facilities	5% of Earthwork			$126,659		$5,361,652
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	0.00	$0	1.40	$19,227,507
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.80	$23,101,387	0.75	$21,657,551
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.10	$2,311,923
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	9.00	$10,414,900	33.00	$38,187,965
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.00	$0	0.00	$0
7	Major Utility Relocation - Suburban	km	$273,407	0.00	$0	0.00	$0
8	Major Utility Relocation - Undeveloped	km	$13,988	11.25	$157,368	57.00	$797,331
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	0.00	$0	0.00	$0
	Suburban	hectare	$479,081	0.00	$0	0.00	$0
	Undeveloped	hectare	$342,201	17.10	$5,851,636	86.64	$29,648,291
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$2,408,588		$12,563,872
	System Elements						
1	Signaling (ATC)	km	$845,654	11.25	$9,513,610	57.00	$48,202,291
2	Communications (w/Fiber Optic Backbone)	km	$699,413	11.25	$7,868,399	57.00	$39,866,557
3	Wayside Protection System	km	$67,144	11.25	$755,366	57.00	$3,827,189
	Electrification Items						
1	Traction Power Supply	km	$432,365	11.25	$4,864,101	57.00	$24,644,781
2	Traction Power Distribution	km	$806,233	11.25	$9,070,119	57.00	$45,955,267
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$22,579,359		$117,557,011
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$22,136,627		$115,251,972
	Total Construction				$80,286,282		$418,795,724
	Total Construction and Right of Way (Includes Environmental Mitigation)				$88,546,507		$461,007,887
	Grand Total				$133,262,493		$693,816,870

High-Speed Train Alignment Alternatives

San Jose to Central Valley Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				GEA Wye North to BNSF		GEA Wye South to BNSF	
	Alignment Cost			GEA-BNSF XN		GEA-UPRR XS	
	Track			Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		11.10		12.15	
1	Double Track Section - At Grade	km	$993,167	11.00	$10,924,835	11.70	$11,620,052
2	Double Track Section - On Structure	km	$1,878,243	0.10	$187,824	0.45	$845,209
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Structure	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	214,888	$1,912,852	183,325	$1,631,890
3	Fill	m3	$9	72,389	$644,380	143,805	$1,280,098
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	3.85	$391,671	1.65	$167,859
8	Special Drainage Facilities	5% of Earthwork			$147,445		$153,992
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	0.00	$0	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.10	$2,887,673	0.45	$12,994,530
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	10.05	$44,219,451
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	23.00	$157,940,235	11.00	$75,536,634
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	2.00	$2,314,422	2.00	$2,314,422
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	2.55	$1,734,863	0.00	$0
7	Major Utility Relocation - Suburban	km	$273,407	1.44	$393,706	5.92	$1,618,569
8	Major Utility Relocation - Undeveloped	km	$13,988	7.22	$100,995	6.68	$93,442
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	3.88	$10,621,920	0.00	$0
	Suburban	hectare	$479,081	2.19	$1,049,188	8.99	$4,306,941
	Undeveloped	hectare	$342,201	10.97	$3,753,945	10.16	$3,476,762
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$6,336,746		$5,613,404
	System Elements						
1	Signaling (ATC)	km	$845,654	11.10	$9,386,762	12.15	$10,274,699
2	Communications (w/Fiber Optic Backbone)	km	$699,413	11.10	$7,763,487	12.15	$8,497,871
3	Wayside Protection System	km	$67,144	11.10	$745,295	12.15	$815,796
	Electrification Items						
1	Traction Power Supply	km	$432,365	11.10	$4,799,247	12.15	$5,253,230
2	Traction Power Distribution	km	$806,233	11.10	$8,949,184	12.15	$9,795,728
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$59,411,602		$51,130,198
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$58,246,669		$50,127,645
	Total Construction				$211,224,877		$187,113,473
	Total Construction and Right of Way (Includes Environmental Mitigation)				$232,986,676		$200,510,580
	Grand Total				$350,644,947		$301,768,423

High-Speed Train Alignment Alternatives

East Bay to Central Valley Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Shinn to Niles Canyon		Niles Canyon to Sunol	
Alignment Cost				UPRR 1		UPRR 2A	
Track				**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		4.50		0.52	
1	Double Track Section - At Grade	km	$993,167	1.90	$1,887,017	0.00	$0
2	Double Track Section - On Structure	km	$1,878,243	2.60	$4,883,431	0.00	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.52	$976,686
	Single Track Section - Total	km		0.00		0.70	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	1.40	$1,314,770
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	1,333,260.00	$11,868,179	463,412.00	$4,125,119
3	Fill	m3	$9	0.00	$0	0.00	$0
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	1.90	$193,292	0.00	$0
8	Special Drainage Facilities	5% of Earthwork			$603,074		$206,256
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	2.60	$35,708,227	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.70	$67,373,097
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.70	$1,351,953
17	Retaining Walls	km	$4,399,945	0.00	$0	1.04	$4,575,943
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.45	$306,152	0.00	$0
7	Major Utility Relocation - Suburban	km	$273,407	1.76	$479,829	0.13	$34,586
8	Major Utility Relocation - Undeveloped	km	$13,988	1.85	$25,808	1.02	$14,317
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	0.69	$1,877,452	0.00	$0
	Suburban	hectare	$479,081	3.02	$1,445,867	0.19	$92,463
	Undeveloped	hectare	$342,201	3.16	$1,079,644	1.56	$533,833
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$2,063,509		$2,503,521
System Elements							
1	Signaling (ATC)	km	$845,654	4.500	$3,805,444	1.220	$1,031,698
2	Communications (w/Fiber Optic Backbone)	km	$699,413	4.500	$3,147,360	1.220	$853,284
3	Wayside Protection System	km	$67,144	4.500	$302,147	1.220	$81,915
Electrification Items							
1	Traction Power Supply	km	$432,365	4.500	$1,945,641	1.220	$527,485
2	Traction Power Distribution	km	$806,233	4.500	$3,628,047	1.220	$983,604
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$19,188,781		$22,078,036
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$18,812,530		$21,645,133
Total Construction					$68,783,647		$83,450,714
Total Construction and Right of Way (Includes Environmental Mitigation)					$75,250,120		$86,580,532
Grand Total					$113,251,431		$130,303,700

High-Speed Train Alignment Alternatives

East Bay to Central Valley Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Niles Canyon to Sunol		Sunol to Pleasanton	
Alignment Cost				UPRR 2B		UPRR 3	
Track				**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		0.00		2.70	
1	Double Track Section - At Grade	km	$993,167	0.00	$0	1.80	$1,790,680
2	Double Track Section - On Structure	km	$1,878,243	0.00	$0	0.90	$1,683,995
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		5.05		0.60	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	10.10	$9,485,125	1.20	$1,123,659
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	376,269.00	$3,349,405	0.00	$0
3	Fill	m3	$9	0.00	$0	0.00	$0
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	0.00	$0	0.00	$0
8	Special Drainage Facilities	5% of Earthwork			$167,470		$0
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	0.00	$0	0.77	$10,528,159
2	High Structure	km	$16,480,720	0.00	$0	0.13	$2,142,494
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	5.05	$280,095,903	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.60	$57,748,369
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	5.05	$9,753,379	0.60	$1,158,817
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	1.00	$1,157,211
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.00	$0	1.58	$1,074,935
7	Major Utility Relocation - Suburban	km	$273,407	0.26	$71,086	0.73	$199,587
8	Major Utility Relocation - Undeveloped	km	$13,988	4.80	$67,144	0.96	$13,429
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	0.00	$0	2.40	$6,570,260
	Suburban	hectare	$479,081	0.40	$191,633	1.10	$526,989
	Undeveloped	hectare	$342,201	7.29	$2,494,645	1.45	$496,191
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$9,521,583		$2,640,684
System Elements							
1	Signaling (ATC)	km	$845,654	5.050	$4,270,554	3.298	$2,788,824
2	Communications (w/Fiber Optic Backbone)	km	$699,413	5.050	$3,532,037	3.298	$2,306,546
3	Wayside Protection System	km	$67,144	5.050	$339,076	3.298	$221,428
Electrification Items							
1	Traction Power Supply	km	$432,365	5.050	$2,183,441	3.298	$1,425,865
2	Traction Power Distribution	km	$806,233	5.050	$4,071,475	3.298	$2,658,819
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$84,046,458		$25,055,520
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$82,398,489		$24,564,235
Total Construction					$317,386,094		$88,022,815
Total Construction and Right of Way (Includes Environmental Mitigation)					$329,593,955		$98,256,940
Grand Total					$496,038,902		$147,876,695

High-Speed Train Alignment Alternatives

East Bay to Central Valley Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Pleasanton		El Charo to Livermore	
Alignment Cost				UPRR 4		UPRR 5	
Track				**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		2.59		6.41	
1	Double Track Section - At Grade	km	$993,167	0.67	$669,951	6.41	$6,361,671
2	Double Track Section - On Structure	km	$1,878,243	1.92	$3,606,226	0.00	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	0.00	$0	0.00	$0
3	Fill	m3	$9	0.00	$0	0.00	$0
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	0.00	$0	0.00	$0
8	Special Drainage Facilities	5% of Earthwork			$0		$0
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	1.92	$26,369,152	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	1.00	$1,157,211
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.99	$673,535	0.13	$88,444
7	Major Utility Relocation - Suburban	km	$273,407	1.42	$389,468	1.60	$437,451
8	Major Utility Relocation - Undeveloped	km	$13,988	0.18	$2,536	4.68	$65,465
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	1.50	$4,106,412	0.19	$520,146
	Suburban	hectare	$479,081	2.17	$1,040,086	2.44	$1,168,958
	Undeveloped	hectare	$342,201	0.28	$94,447	7.11	$2,433,049
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$1,173,224		$791,128
System Elements							
1	Signaling (ATC)	km	$845,654	2.595	$2,194,101	6.405	$5,416,787
2	Communications (w/Fiber Optic Backbone)	km	$699,413	2.595	$1,814,670	6.405	$4,480,050
3	Wayside Protection System	km	$67,144	2.595	$174,208	6.405	$430,085
Electrification Items							
1	Traction Power Supply	km	$432,365	2.595	$1,121,796	6.405	$2,769,485
2	Traction Power Distribution	km	$806,233	2.595	$2,091,819	6.405	$5,164,276
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$11,608,016		$7,977,472
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$11,380,408		$7,821,051
Total Construction					$39,107,462		$26,370,925
Total Construction and Right of Way (Includes Environmental Mitigation)					$45,521,631		$31,284,206
Grand Total					$68,510,055		$47,082,729

High-Speed Train Alignment Alternatives

East Bay to Central Valley Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Livermore to Patterson Pass cut off		Patterson Pass cut off to Greenville	
Alignment Cost				UPRR 6		UPRR 7	
Track				**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		3.55		2.99	
1	Double Track Section - At Grade	km	$993,167	3.40	$3,376,767	2.99	$2,969,569
2	Double Track Section - On Structure	km	$1,878,243	0.15	$283,014	0.00	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	0.00	$0	13,320.00	$118,570
3	Fill	m3	$9	0.00	$0	0.00	$0
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	0.00	$0	1.80	$183,119
8	Special Drainage Facilities	5% of Earthwork			$0		$15,084
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	0.00	$0	0.00	$0
2	High Structure	km	$16,480,720	0.15	$2,472,108	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	1.00	$17,167,417
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	3.00	$20,600,900	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	2.09	$1,421,907	1.08	$734,765
7	Major Utility Relocation - Suburban	km	$273,407	1.07	$292,545	0.39	$106,629
8	Major Utility Relocation - Undeveloped	km	$13,988	0.39	$5,455	1.55	$21,676
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	3.19	$8,732,970	1.63	$4,462,301
	Suburban	hectare	$479,081	1.62	$776,112	0.59	$282,658
	Undeveloped	hectare	$342,201	0.59	$201,899	2.36	$807,594
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$1,157,250		$895,222
System Elements							
1	Signaling (ATC)	km	$845,654	3.551	$3,002,648	2.990	$2,528,506
2	Communications (w/Fiber Optic Backbone)	km	$699,413	3.551	$2,483,393	2.990	$2,091,246
3	Wayside Protection System	km	$67,144	3.551	$238,406	2.990	$200,760
Electrification Items							
1	Traction Power Supply	km	$432,365	3.551	$1,535,188	2.990	$1,292,770
2	Traction Power Distribution	km	$806,233	3.551	$2,862,675	2.990	$2,410,636
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$12,608,025		$9,253,573
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$12,360,809		$9,072,131
Total Construction					$38,575,006		$29,840,747
Total Construction and Right of Way (Includes Environmental Mitigation)					$49,443,237		$36,288,523
Grand Total					$74,412,071		$54,614,227

High-Speed Train Alignment Alternatives

East Bay to Central Valley Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Greenville to Altamont Pass		Altamont Pass to County Line	
Alignment Cost				UPRR 8		UPRR 9	
Track				**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		11.25		5.26	
1	Double Track Section - At Grade	km	$993,167	2.29	$2,275,345	4.85	$4,816,859
2	Double Track Section - On Structure	km	$1,878,243	3.06	$5,747,422	0.00	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	5.90	$11,079,753	0.41	$771,958
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	21,091,950.00	$187,752,598	391,910.00	$3,488,635
3	Fill	m3	$9	3,552,290.00	$31,621,148	485,180.00	$4,318,890
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	8.19	$833,192	2.85	$289,939
8	Special Drainage Facilities	5% of Earthwork			$11,010,347		$404,873
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	0.98	$13,459,255	0.00	$0
2	High Structure	km	$16,480,720	2.08	$34,279,898	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	11.80	$51,910,555	0.82	$3,607,955
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	1.00	$1,093,628	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.79	$536,719	0.00	$0
7	Major Utility Relocation - Suburban	km	$273,407	0.00	$0	0.00	$0
8	Major Utility Relocation - Undeveloped	km	$13,988	10.48	$146,612	3.50	$48,959
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	1.20	$3,290,605	0.00	$0
	Suburban	hectare	$479,081	0.00	$0	0.00	$0
	Undeveloped	hectare	$342,201	15.97	$5,465,976	5.33	$1,825,300
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$11,514,542		$982,385
System Elements							
1	Signaling (ATC)	km	$845,654	11.250	$9,513,610	5.261	$4,448,987
2	Communications (w/Fiber Optic Backbone)	km	$699,413	11.250	$7,868,399	5.261	$3,679,613
3	Wayside Protection System	km	$67,144	11.250	$755,366	5.261	$353,243
Electrification Items							
1	Traction Power Supply	km	$432,365	11.250	$4,864,101	5.261	$2,274,670
2	Traction Power Distribution	km	$806,233	11.250	$9,070,119	5.261	$4,241,591
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$103,042,744		$9,066,233
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$101,022,298		$8,888,464
Total Construction					$383,818,069		$32,746,171
Total Construction and Right of Way (Includes Environmental Mitigation)					$404,089,192		$35,553,856
Grand Total					$608,154,234		$53,508,554

High-Speed Train Alignment Alternatives

East Bay to Central Valley Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				County Line to Tracy Downtown		Tracy Downtown to I-205	
Alignment Cost				UPRR 10		UPRR 11	
Track				Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		12.84		7.34	
1	Double Track Section - At Grade	km	$993,167	10.99	$10,911,924	6.03	$5,988,796
2	Double Track Section - On Structure	km	$1,878,243	1.85	$3,474,749	1.31	$2,460,498
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	2,091,950.00	$18,621,751	1,442,610.00	$12,841,571
3	Fill	m3	$9	2,668,260.00	$23,751,846	197,600.00	$1,758,961
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	10.99	$1,117,739	6.03	$613,449
8	Special Drainage Facilities	5% of Earthwork			$2,174,567		$760,699
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	1.15	$15,794,023	1.31	$17,991,453
2	High Structure	km	$16,480,720	0.70	$11,536,504	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	2.00	$46,238,451	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	2.00	$13,733,933	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	3.00	$3,471,633	2.00	$2,314,422
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.25	$168,044	0.26	$176,888
7	Major Utility Relocation - Suburban	km	$273,407	4.82	$1,316,865	5.01	$1,369,769
8	Major Utility Relocation - Undeveloped	km	$13,988	7.29	$101,925	7.57	$105,891
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	0.38	$1,029,341	0.39	$1,067,667
	Suburban	hectare	$479,081	7.34	$3,516,457	7.61	$3,645,809
	Undeveloped	hectare	$342,201	11.10	$3,799,799	11.51	$3,938,733
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$5,670,294		$2,019,220
System Elements							
1	Signaling (ATC)	km	$845,654	12.837	$10,855,663	7.340	$6,207,102
2	Communications (w/Fiber Optic Backbone)	km	$699,413	12.837	$8,978,368	7.340	$5,133,693
3	Wayside Protection System	km	$67,144	12.837	$861,923	7.340	$492,835
Electrification Items							
1	Traction Power Supply	km	$432,365	12.837	$5,550,264	7.340	$3,173,556
2	Traction Power Distribution	km	$806,233	12.837	$10,349,610	7.340	$5,917,748
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$51,771,547		$19,884,584
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$50,756,419		$19,494,690
Total Construction					$189,009,784		$67,307,332
Total Construction and Right of Way (Includes Environmental Mitigation)					$203,025,675		$77,978,761
Grand Total					$305,553,641		$117,358,035

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				I-205 to S. UPRR		I-205 to Lathrop - Northern	
Alignment Cost				UPRR 12		UPRR 13	
Track				**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		8.31		13.14	
1	Double Track Section - At Grade	km	$993,167	8.01	$7,955,267	12.84	$12,752,262
2	Double Track Section - On Structure	km	$1,878,243	0.30	$563,473	0.30	$563,473
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	0.00	$0	0.00	$0
3	Fill	m3	$9	1,725,580.00	$15,360,464	837,200.91	$7,452,447
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	8.01	$814,880	12.84	$1,306,250
8	Special Drainage Facilities	5% of Earthwork			$808,767		$437,935
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	0.00	$0	0.00	$0
2	High Structure	km	$16,480,720	0.30	$4,944,216	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.30	$8,663,020
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	1.40	$6,159,923	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	3.00	$53,791,239
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	5.00	$5,786,055	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	2.32	$1,578,385	5.78	$3,933,444
7	Major Utility Relocation - Suburban	km	$273,407	0.00	$0	0.00	$0
8	Major Utility Relocation - Undeveloped	km	$13,988	5.98	$83,650	7.36	$102,931
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	3.54	$9,691,133	8.79	$24,063,576
	Suburban	hectare	$479,081	0.00	$0	0.00	$0
	Undeveloped	hectare	$342,201	9.09	$3,110,607	11.18	$3,825,807
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$2,032,359		$3,793,879
System Elements							
1	Signaling (ATC)	km	$845,654	8.310	$7,027,387	13.140	$11,111,897
2	Communications (w/Fiber Optic Backbone)	km	$699,413	8.310	$5,812,124	13.140	$9,190,290
3	Wayside Protection System	km	$67,144	8.310	$557,964	13.140	$882,268
Electrification Items							
1	Traction Power Supply	km	$432,365	8.310	$3,592,950	13.140	$5,681,270
2	Traction Power Distribution	km	$806,233	8.310	$6,699,794	13.140	$10,593,898
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$21,057,746		$40,327,201
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$20,644,849		$39,536,472
Total Construction					$67,745,299		$126,462,626
Total Construction and Right of Way (Includes Environmental Mitigation)					$82,579,397		$158,145,888
Grand Total					$124,281,993		$238,009,562

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High-Speed Train Alignment Alternatives

East Bay to Central Valley Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Sunol to Dublin/Pleasanton BART		Dublin/Pleasanton BART to El Charo Road	
Alignment Cost				I680/580/UPRR 1		I680/580/UPRR 2	
Track				**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		11.27		4.09	
1	Double Track Section - At Grade	km	$993,167	0.00	$0	0.00	$0
2	Double Track Section - On Structure	km	$1,878,243	11.27	$21,165,915	4.09	$7,685,769
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.45		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.90	$845,209	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	0.00	$0	30,280.00	$269,541
3	Fill	m3	$9	0.00	$0	0.00	$0
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	0.00	$0	0.00	$0
8	Special Drainage Facilities	5% of Earthwork			$0		$13,477
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	0.00	$0	0.00	$0
2	High Structure	km	$16,480,720	11.27	$185,721,235	4.09	$67,439,107
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.45	$43,311,277	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.45	$869,113	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	7.65	$5,203,228	2.45	$1,669,550
7	Major Utility Relocation - Suburban	km	$273,407	3.11	$849,476	0.98	$268,376
8	Major Utility Relocation - Undeveloped	km	$13,988	0.96	$13,373	0.65	$9,154
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	12.02	$32,906,051	3.74	$10,238,655
	Suburban	hectare	$479,081	4.74	$2,268,450	1.50	$716,706
	Undeveloped	hectare	$342,201	1.46	$498,587	1.00	$341,174
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$8,741,624		$2,670,614
System Elements							
1	Signaling (ATC)	km	$845,654	11.719	$9,910,222	4.092	$3,460,417
2	Communications (w/Fiber Optic Backbone)	km	$699,413	11.719	$8,196,424	4.092	$2,861,999
3	Wayside Protection System	km	$67,144	11.719	$786,857	4.092	$274,752
Electrification Items							
1	Traction Power Supply	km	$432,365	11.719	$5,066,880	4.092	$1,769,236
2	Traction Power Distribution	km	$806,233	11.719	$9,448,242	4.092	$3,299,104
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$85,629,551		$26,261,846
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$83,950,541		$25,746,908
Total Construction					$291,387,451		$89,020,483
Total Construction and Right of Way (Includes Environmental Mitigation)					$335,802,162		$102,987,632
Grand Total					$505,382,254		$154,996,386

High-Speed Train Alignment Alternatives

East Bay to Central Valley Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				El Charo road to Livermore (I-580)		Livermore (I-580) to Greenville	
	Alignment Cost			I680/580/UPRR 3		I680/580/UPRR 4	
	Track			**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		5.32		8.11	
1	Double Track Section - At Grade	km	$993,167	0.00	$0	0.00	$0
2	Double Track Section - On Structure	km	$1,878,243	5.32	$9,992,250	8.11	$15,232,547
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	38,200.00	$340,042	70,000.00	$623,114
3	Fill	m3	$9	15,000.00	$133,524	114,150.00	$1,016,120
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	0.00	$0	0.00	$0
8	Special Drainage Facilities	5% of Earthwork			$23,678		$81,962
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	0.00	$0	0.95	$13,047,237
2	High Structure	km	$16,480,720	5.32	$87,677,431	7.16	$118,001,956
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	3.11	$2,115,376	3.57	$2,427,719
7	Major Utility Relocation - Suburban	km	$273,407	0.53	$144,085	1.05	$288,253
8	Major Utility Relocation - Undeveloped	km	$13,988	1.63	$22,853	3.49	$48,781
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	4.74	$12,973,525	5.44	$14,887,114
	Suburban	hectare	$479,081	0.80	$384,798	1.61	$769,884
	Undeveloped	hectare	$342,201	2.49	$852,080	5.32	$1,818,798
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$3,468,466		$5,216,632
	System Elements						
1	Signaling (ATC)	km	$845,654	5.320	$4,498,881	8.110	$6,858,256
2	Communications (w/Fiber Optic Backbone)	km	$699,413	5.320	$3,720,879	8.110	$5,672,242
3	Wayside Protection System	km	$67,144	5.320	$357,204	8.110	$544,535
	Electrification Items						
1	Traction Power Supply	km	$432,365	5.320	$2,300,180	8.110	$3,506,477
2	Traction Power Distribution	km	$806,233	5.320	$4,289,158	8.110	$6,538,548
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$33,990,075		$50,127,944
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$33,323,603		$49,145,044
	Total Construction				$115,615,542		$173,887,747
	Total Construction and Right of Way (Includes Environmental Mitigation)				$133,294,412		$196,580,175
	Grand Total				$200,608,090		$295,853,163

High-Speed Train Alignment Alternatives

East Bay to Central Valley Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Greenville to Altamont Pass		UPRR to I-580 Connector	
	Alignment Cost			I680/580/UPRR 5		Pleasonton X	
	Track			Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		6.44		4.45	
1	Double Track Section - At Grade	km	$993,167	0.66	$655,490	3.55	$3,528,722
2	Double Track Section - On Structure	km	$1,878,243	2.68	$5,033,690	0.90	$1,690,418
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.55	$1,033,033	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	2.55	$4,780,127	0.00	$0
	Single Track Section - Total	km		2.22		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	4.44	$4,169,698	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	6,296,630.00	$56,050,230	5,100.00	$45,398
3	Fill	m3	$9	1,629,230.00	$14,502,792	114,700.00	$1,021,016
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	3.19	$324,019	3.55	$361,152
8	Special Drainage Facilities	5% of Earthwork			$3,543,852		$71,378
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	0.89	$12,223,201	0.00	$0
2	High Structure	km	$16,480,720	1.19	$19,612,057	0.50	$8,240,360
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.60	$17,326,041	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.40	$9,247,690
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	2.22	$123,131,268	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.55	$26,468,002	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	2.77	$5,349,873	0.00	$0
17	Retaining Walls	km	$4,399,945	5.09	$22,395,722	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	3.00	$3,471,633
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.00	$0	0.68	$464,331
7	Major Utility Relocation - Suburban	km	$273,407	0.78	$213,257	0.00	$0
8	Major Utility Relocation - Undeveloped	km	$13,988	7.91	$110,647	3.87	$54,100
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	0.00	$0	1.04	$2,847,113
	Suburban	hectare	$479,081	1.18	$565,316	0.00	$0
	Undeveloped	hectare	$342,201	12.02	$4,113,256	5.89	$2,016,932
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$10,247,902		$1,226,725
System Elements							
1	Signaling (ATC)	km	$845,654	8.655	$7,319,137	4.453	$3,765,698
2	Communications (w/Fiber Optic Backbone)	km	$699,413	8.655	$6,053,422	4.453	$3,114,487
3	Wayside Protection System	km	$67,144	8.655	$581,129	4.453	$298,991
Electrification Items							
1	Traction Power Supply	km	$432,365	8.655	$3,742,115	4.453	$1,925,319
2	Traction Power Distribution	km	$806,233	8.655	$6,977,945	4.453	$3,590,154
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$90,913,422		$11,980,313
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$89,130,806		$11,745,405
Total Construction					$341,596,749		$40,890,849
Total Construction and Right of Way (Includes Environmental Mitigation)					$356,523,223		$46,981,619
Grand Total					$536,567,450		$70,707,337

High-Speed Train Alignment Alternatives

East Bay to Central Valley Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Patterson Pass		County Line to South of Tracy	
Alignment Cost				Patterson Pass		S UPRR 1	
Track				**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		19.07		2.09	
1	Double Track Section - At Grade	km	$993,167	12.53	$12,448,353	2.09	$2,072,739
2	Double Track Section - On Structure	km	$1,878,243	1.60	$3,005,188	0.00	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	4.94	$9,278,518	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	24,522,780.00	$218,292,556	100,650.00	$895,948
3	Fill	m3	$9	9,043,540.00	$80,502,188	791,870.00	$7,048,929
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	20.85	$2,121,130	2.09	$212,316
8	Special Drainage Facilities	5% of Earthwork			$15,045,794		$407,860
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	0.00	$0	0.00	$0
2	High Structure	km	$16,480,720	1.60	$26,369,152	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	9.88	$43,471,460	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	1.00	$1,093,628	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	3.00	$3,471,633	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	2.29	$1,556,886	0.00	$0
7	Major Utility Relocation - Suburban	km	$273,407	2.10	$573,526	0.00	$0
8	Major Utility Relocation - Undeveloped	km	$13,988	14.68	$205,402	2.09	$29,235
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	3.49	$9,548,778	0.00	$0
	Suburban	hectare	$479,081	3.20	$1,531,623	0.00	$0
	Undeveloped	hectare	$342,201	22.38	$7,657,773	3.19	$1,089,978
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$14,154,352		$498,500
System Elements							
1	Signaling (ATC)	km	$845,654	19.074	$16,130,009	2.087	$1,764,880
2	Communications (w/Fiber Optic Backbone)	km	$699,413	19.074	$13,340,609	2.087	$1,459,676
3	Wayside Protection System	km	$67,144	19.074	$1,280,698	2.087	$140,129
Electrification Items							
1	Traction Power Supply	km	$432,365	19.074	$8,246,922	2.087	$902,345
2	Traction Power Distribution	km	$806,233	19.074	$15,378,084	2.087	$1,682,608
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$128,699,587		$4,642,312
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$126,176,066		$4,551,286
Total Construction					$471,811,737		$16,616,665
Total Construction and Right of Way (Includes Environmental Mitigation)					$504,704,263		$18,205,144
Grand Total					$759,579,915		$27,398,741

High-Speed Train Alignment Alternatives

East Bay to Central Valley Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				South of Tracy to Tracy ACE Station		Tracy ACE Station to I-205	
	Alignment Cost			S UPRR 2		S UPRR 3	
	Track			Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		15.51		7.14	
1	Double Track Section - At Grade	km	$993,167	12.74	$12,652,946	5.90	$5,859,684
2	Double Track Section - On Structure	km	$1,878,243	2.77	$5,202,732	1.24	$2,329,021
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	8,458,540.00	$75,294,739	85,480.00	$760,911
3	Fill	m3	$9	3,233,370.00	$28,782,242	0.00	$0
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	12.74	$1,296,076	5.90	$600,224
8	Special Drainage Facilities	5% of Earthwork			$5,268,653		$68,057
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	1.21	$16,618,059	1.24	$17,030,077
2	High Structure	km	$16,480,720	1.46	$24,061,851	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.10	$2,887,673	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.05	$1,155,961	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	4.00	$27,467,867	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	3.00	$3,471,633
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.00	$0	0.00	$0
7	Major Utility Relocation - Suburban	km	$273,407	4.65	$1,271,343	0.81	$221,460
8	Major Utility Relocation - Undeveloped	km	$13,988	10.92	$152,752	6.44	$90,084
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	0.00	$0	0.00	$0
	Suburban	hectare	$479,081	7.07	$3,387,105	1.24	$594,061
	Undeveloped	hectare	$342,201	16.60	$5,680,536	9.78	$3,346,725
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$7,389,868		$1,523,578
	System Elements						
1	Signaling (ATC)	km	$845,654	15.510	$13,116,097	7.140	$6,037,971
2	Communications (w/Fiber Optic Backbone)	km	$699,413	15.510	$10,847,900	7.140	$4,993,811
3	Wayside Protection System	km	$67,144	15.510	$1,041,398	7.140	$479,406
	Electrification Items						
1	Traction Power Supply	km	$432,365	15.510	$6,705,975	7.140	$3,087,083
2	Traction Power Distribution	km	$806,233	15.510	$12,504,670	7.140	$5,756,502
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$67,010,543		$14,343,823
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$65,696,611		$14,062,572
	Total Construction				$246,328,935		$50,785,924
	Total Construction and Right of Way (Includes Environmental Mitigation)				$262,786,444		$56,250,288
	Grand Total				$395,493,599		$84,656,684

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				I-205 to Southeast of Manteca		I-205 to Lathrop - Southern	
Alignment Cost				S UPRR 4		S UPRR 5	
Track				**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		6.46		11.07	
1	Double Track Section - At Grade	km	$993,167	5.95	$5,909,343	10.37	$10,302,120
2	Double Track Section - On Structure	km	$1,878,243	0.51	$961,660	0.70	$1,314,770
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	0.00	$0	0.00	$0
3	Fill	m3	$9	421,090.00	$3,748,385	2,457,170.79	$21,872,809
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	5.95	$605,310	10.37	$1,055,275
8	Special Drainage Facilities	5% of Earthwork			$217,685		$1,146,404
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	0.00	$0	0.00	$0
2	High Structure	km	$16,480,720	0.21	$3,460,951	0.10	$1,648,072
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.60	$17,326,041	0.30	$8,663,020
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.30	$6,935,768
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	1.00	$4,399,945	7.00	$30,799,617
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	2.00	$35,860,826
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	3.00	$3,471,633	2.00	$2,314,422
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.00	$0	5.87	$3,991,613
7	Major Utility Relocation - Suburban	km	$273,407	3.36	$918,648	0.00	$0
8	Major Utility Relocation - Undeveloped	km	$13,988	3.55	$49,658	5.20	$72,780
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	0.00	$0	8.94	$24,476,955
	Suburban	hectare	$479,081	5.10	$2,443,315	0.00	$0
	Undeveloped	hectare	$342,201	5.39	$1,844,463	7.93	$2,713,311
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$1,784,736		$4,726,335
System Elements							
1	Signaling (ATC)	km	$845,654	6.462	$5,464,618	11.073	$9,363,929
2	Communications (w/Fiber Optic Backbone)	km	$699,413	6.462	$4,519,609	11.073	$7,744,603
3	Wayside Protection System	km	$67,144	6.462	$433,882	11.073	$743,482
Electrification Items							
1	Traction Power Supply	km	$432,365	6.462	$2,793,940	11.073	$4,787,573
2	Traction Power Distribution	km	$806,233	6.462	$5,209,876	11.073	$8,927,415
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$16,718,743		$48,312,581
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$16,390,924		$47,365,275
Total Construction					$59,491,184		$157,544,499
Total Construction and Right of Way (Includes Environmental Mitigation)					$65,563,697		$189,461,101
Grand Total					$98,673,364		$285,138,957

High-Speed Train Alignment Alternatives

East Bay to Central Valley Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Niles to Union city - Niles Wye (E) to Niles Wye (N)		Niles to Fremont - Niles Wye (E) to Niles Wye (S)	
	Alignment Cost			**Niles/Dumbarton XN**		**Niles/Dumbarton XS**	
Track				**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		4.25		5.38	
1	Double Track Section - At Grade	km	$993,167	0.37	$366,479	3.85	$3,823,692
2	Double Track Section - On Structure	km	$1,878,243	1.30	$2,441,715	0.64	$1,203,953
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	2.59	$4,855,257	0.89	$1,666,001
	Single Track Section - Total	km		0.00		3.50	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	7.00	$6,573,849
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	667,327.00	$5,940,294	651,171.00	$5,796,479
3	Fill	m3	$9	2,327.00	$20,714	23,607.00	$210,141
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	2.95	$300,112	4.75	$483,231
8	Special Drainage Facilities	5% of Earthwork			$313,056		$324,493
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	1.30	$17,854,113	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.64	$10,564,142
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	3.50	$194,125,873
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.15	$7,450,288
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	3.50	$6,759,767
17	Retaining Walls	km	$4,399,945	2.59	$11,395,858	1.47	$6,485,519
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	2.00	$34,334,834
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	2.00	$35,860,826	3.00	$53,791,239
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.47	$319,759	1.69	$1,149,772
7	Major Utility Relocation - Suburban	km	$273,407	0.98	$267,939	3.20	$874,902
8	Major Utility Relocation - Undeveloped	km	$13,988	2.81	$39,307	4.00	$55,953
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	0.71	$1,943,702	2.56	$7,008,277
	Suburban	hectare	$479,081	1.49	$713,831	4.86	$2,328,335
	Undeveloped	hectare	$342,201	4.26	$1,457,776	6.07	$2,077,160
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$2,763,083		$10,829,508
System Elements							
1	Signaling (ATC)	km	$845,654	4.254	$3,597,413	8.878	$7,507,718
2	Communications (w/Fiber Optic Backbone)	km	$699,413	4.254	$2,975,304	8.878	$6,209,391
3	Wayside Protection System	km	$67,144	4.254	$285,629	8.878	$596,102
Electrification Items							
1	Traction Power Supply	km	$432,365	4.254	$1,839,279	8.878	$3,838,533
2	Traction Power Distribution	km	$806,233	4.254	$3,429,714	8.878	$7,157,734
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$25,240,196		$97,722,856
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$24,745,290		$95,806,722
Total Construction					$92,102,769		$360,983,607
Total Construction and Right of Way (Includes Environmental Mitigation)					$98,981,161		$383,226,888
Grand Total					$148,966,648		$576,756,466

High-Speed Alignment Alternatives

San Francisco Bay Crossings Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Transbay Transit Center tube to SF Bay		4th/Townsend tube to SF Bay	
Alignment Cost				TB-1		TB-2	
Track				**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		0.34		0.19	
1	Double Track Section - At Grade	km	$993,167	0.00	$0	0.00	$0
2	Double Track Section - On Structure	km	$1,878,243	0.00	$0	0.00	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.34	$638,602	0.19	$356,866
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		1.11		0.61	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	2.22	$2,084,849	1.22	$1,145,728
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
11	Regional Rail Bay Crossing Estimate	Lump Sum		1.03	$370,512,590	1.03	$370,512,590
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	0	$0	0	$0
3	Fill	m3	$9	0	$0	0	$0
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	0.00	$0	0.00	$0
8	Special Drainage Facilities	5% of Earthwork			$0		$0
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	0.00	$0	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	2.08	$115,366,233	0.61	$33,833,366
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.40	$38,498,913	0.19	$18,286,984
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	2.48	$4,789,778	0.80	$1,545,090
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.00	$0	0.00	$0
7	Major Utility Relocation - Suburban	km	$273,407	0.00	$0	0.00	$0
8	Major Utility Relocation - Undeveloped	km	$13,988	0.00	$0	0.00	$0
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	0.00	$0	0.00	$0
	Suburban	hectare	$479,081	0.00	$0	0.00	$0
	Undeveloped	hectare	$342,201	0.00	$0	0.00	$0
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$4,965,361		$1,723,460
System Elements							
1	Signaling (ATC)	km	$845,654	1.45	$1,226,199	0.80	$676,523
2	Communications (w/Fiber Optic Backbone)	km	$699,413	1.45	$1,014,149	0.80	$559,531
3	Wayside Protection System	km	$67,144	1.45	$97,358	0.80	$53,715
Electrification Items							
1	Traction Power Supply	km	$432,365	1.45	$626,929	0.80	$345,892
2	Traction Power Distribution	km	$806,233	1.45	$1,169,038	0.80	$644,986
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$43,471,739		$15,088,896
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$42,619,352		$14,793,035
Total Construction					$165,512,048		$57,448,681
Total Construction and Right of Way (Includes Environmental Mitigation)					$170,477,409		$59,172,141
Grand Total					$627,081,091		$459,566,662

High-Speed Alignment Alternatives

San Francisco Bay Crossings Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				SF Bay to West Oakland		Dumbarton Bay Crossing to Don Edwards	
Alignment Cost				TB-3		DUMBARTON 1 (HIGH BRIDGE)	
Track				**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		0.00		5.01	
1	Double Track Section - At Grade	km	$993,167	0.00	$0	2.20	$2,184,967
2	Double Track Section - On Structure	km	$1,878,243	0.00	$0	2.81	$5,274,105
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
11	Regional Rail Bay Crossing Estimate	Lump Sum		9.23	$3,334,613,307	5.00	$486,398,524
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	0	$0	0	$0
3	Fill	m3	$9	0	$0	0	$0
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	0.00	$0	5.90	$600,224
8	Special Drainage Facilities	5% of Earthwork			$0		$30,011
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	0.00	$0	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.81	$13,349,383
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	2.00	$57,753,469
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	8.00	$143,443,305
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.00	$0	4.04	$2,748,567
7	Major Utility Relocation - Suburban	km	$273,407	0.00	$0	1.52	$414,212
8	Major Utility Relocation - Undeveloped	km	$13,988	0.00	$0	4.34	$60,751
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	0.00	$0	6.16	$16,855,454
	Suburban	hectare	$479,081	0.00	$0	2.31	$1,106,199
	Undeveloped	hectare	$342,201	0.00	$0	2.31	$790,142
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$0		$7,204,075
System Elements							
1	Signaling (ATC)	km	$845,654	0.00	$0	5.01	$4,235,036
2	Communications (w/Fiber Optic Backbone)	km	$699,413	0.00	$0	5.01	$3,502,662
3	Wayside Protection System	km	$67,144	0.00	$0	5.01	$336,256
Electrification Items							
1	Traction Power Supply	km	$432,365	0.00	$0	5.01	$2,165,282
2	Traction Power Distribution	km	$806,233	0.00	$0	5.01	$4,037,614
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$0		$67,853,387
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$0		$66,522,928
Total Construction					$0		$240,135,843
Total Construction and Right of Way (Includes Environmental Mitigation)					$0		$266,091,713
Grand Total					$3,334,613,307		$886,866,552

High-Speed Alignment Alternatives

San Francisco Bay Crossings Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Dumbarton Bay Crossing to Don Edwards		Dumbarton Bay Crossing to Don Edwards	
Alignment Cost				**DUMBARTON 1 (LOW BRIDGE)**		**DUMBARTON 1 (TUBE)**	
Track				**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		6.55		5.01	
1	Double Track Section - At Grade	km	$993,167	6.55	$6,505,243	5.01	$4,973,780
2	Double Track Section - On Structure	km	$1,878,243	0.00	$0	0.00	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
11	Regional Rail Bay Crossing Estimate	Lump Sum		5.00	$322,767,859	5.00	$702,953,999
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	0	$0	0	$0
3	Fill	m3	$9	0	$0	0	$0
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	6.55	$666,350	5.90	$600,224
8	Special Drainage Facilities	5% of Earthwork			$33,318		$30,011
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	0.00	$0	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	8.00	$143,443,305	8.00	$143,443,305
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	4.08	$2,775,781	6.04	$4,109,244
7	Major Utility Relocation - Suburban	km	$273,407	1.53	$418,313	2.27	$619,267
8	Major Utility Relocation - Undeveloped	km	$13,988	4.39	$61,353	6.49	$90,826
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	6.22	$17,022,448	9.21	$25,199,684
	Suburban	hectare	$479,081	2.33	$1,117,218	3.45	$1,653,789
	Undeveloped	hectare	$342,201	2.33	$798,013	3.45	$1,181,278
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$5,177,294		$5,044,305
System Elements							
1	Signaling (ATC)	km	$845,654	6.55	$5,539,035	5.01	$4,235,036
2	Communications (w/Fiber Optic Backbone)	km	$699,413	6.55	$4,581,157	5.01	$3,502,662
3	Wayside Protection System	km	$67,144	6.55	$439,791	5.01	$336,256
Electrification Items							
1	Traction Power Supply	km	$432,365	6.55	$2,831,988	5.01	$2,165,282
2	Traction Power Distribution	km	$806,233	6.55	$5,280,825	5.01	$4,037,614
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$50,156,314		$51,311,753
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$49,172,857		$50,305,640
Total Construction					$172,576,457		$168,143,505
Total Construction and Right of Way (Includes Environmental Mitigation)					$196,691,429		$201,222,560
Grand Total					$618,788,460		$1,005,793,953

High-Speed Alignment Alternatives

San Francisco Bay Crossings Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Dumbarton Bay Crossing to Don Edwards		Dumbarton Wye North to Caltrain	
	Alignment Cost			DUMBARTON 2 (HIGH BRIDGE)		DUMBARTON XN	
	Track			Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		8.00		2.20	
1	Double Track Section - At Grade	km	$993,167	0.00	$0	2.20	$2,184,967
2	Double Track Section - On Structure	km	$1,878,243	8.00	$15,025,941	0.00	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
11	Regional Rail Bay Crossing Estimate	Lump Sum		5.00	$486,398,524	0.00	$0
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	0	$0	16,280	$144,918
3	Fill	m3	$9	107,820	$959,773	0	$0
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	0.00	$0	2.20	$223,812
8	Special Drainage Facilities	5% of Earthwork			$47,989		$18,437
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	0.00	$0	0.00	$0
2	High Structure	km	$16,480,720	8.00	$131,845,761	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	5.00	$89,652,066
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	3.50	$2,381,388	1.19	$808,242
7	Major Utility Relocation - Suburban	km	$273,407	6.28	$1,716,012	0.01	$3,281
8	Major Utility Relocation - Undeveloped	km	$13,988	1.21	$16,884	0.00	$0
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	5.33	$14,602,402	1.81	$4,941,383
	Suburban	hectare	$479,081	11.22	$5,375,772	0.02	$11,498
	Undeveloped	hectare	$342,201	1.84	$629,479	0.00	$0
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$5,244,006		$2,979,225
	System Elements						
1	Signaling (ATC)	km	$845,654	8.00	$6,765,234	2.20	$1,860,439
2	Communications (w/Fiber Optic Backbone)	km	$699,413	8.00	$5,595,306	2.20	$1,538,709
3	Wayside Protection System	km	$67,144	8.00	$537,149	2.20	$147,716
	Electrification Items						
1	Traction Power Supply	km	$432,365	8.00	$3,458,917	2.20	$951,202
2	Traction Power Distribution	km	$806,233	8.00	$6,449,862	2.20	$1,773,712
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$51,166,228		$27,346,100
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$50,162,969		$26,809,902
	Total Construction				$174,800,215		$99,307,501
	Total Construction and Right of Way (Includes Environmental Mitigation)				$200,651,875		$107,239,607
	Grand Total				$788,379,595		$161,395,609

High-Speed Alignment Alternatives

San Francisco Bay Crossings Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Dumbarton Wye South to Caltrain		Fremont Central Park	
	Alignment Cost			**DUMBARTON XS**		**FREMONT CP (HIGH BRIDGE)**	
	Track			**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		0.96		12.69	
1	Double Track Section - At Grade	km	$993,167	0.96	$953,440	1.18	$1,171,937
2	Double Track Section - On Structure	km	$1,878,243	0.00	$0	6.04	$11,344,585
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	4.69	$8,808,958
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.78	$1,465,029
	Single Track Section - Total	km		0.00		1.50	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	3.00	$2,817,364
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
11	Regional Rail Bay Crossing Estimate	Lump Sum		0.00	$0	5.00	$486,398,524
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	5,920	$52,698	0	$0
3	Fill	m3	$9	0	$0	0	$0
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	0.96	$97,664	5.06	$514,768
8	Special Drainage Facilities	5% of Earthwork			$7,518		$25,738
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	0.00	$0	2.45	$33,648,137
2	High Structure	km	$16,480,720	0.00	$0	3.49	$57,517,713
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.10	$2,311,923
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	1.50	$83,196,803
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	4.69	$225,699,876
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	6.19	$11,955,132
17	Retaining Walls	km	$4,399,945	0.00	$0	1.16	$5,103,937
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	4.00	$68,669,667
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	9.00	$161,373,718
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.88	$600,875	5.90	$4,013,656
7	Major Utility Relocation - Suburban	km	$273,407	0.08	$20,998	4.59	$1,254,528
8	Major Utility Relocation - Undeveloped	km	$13,988	0.00	$0	5.46	$76,411
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	1.35	$3,684,821	13.32	$36,464,942
	Suburban	hectare	$479,081	0.12	$56,053	9.32	$4,466,954
	Undeveloped	hectare	$342,201	0.00	$0	10.66	$3,646,493
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$134,099		$21,642,686
	System Elements						
1	Signaling (ATC)	km	$845,654	0.96	$811,828	14.19	$11,999,834
2	Communications (w/Fiber Optic Backbone)	km	$699,413	0.96	$671,437	14.19	$9,924,674
3	Wayside Protection System	km	$67,144	0.96	$64,458	14.19	$952,769
	Electrification Items						
1	Traction Power Supply	km	$432,365	0.96	$415,070	14.19	$6,135,253
2	Traction Power Distribution	km	$806,233	0.96	$773,983	14.19	$11,440,443
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$2,127,960		$200,849,201
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$2,086,235		$196,910,982
	Total Construction				$4,469,968		$721,422,852
	Total Construction and Right of Way (Includes Environmental Mitigation)				$8,344,940		$787,643,927
	Grand Total				$12,559,135		$1,671,802,634

High-Speed Alignment Alternatives

San Francisco Bay Crossings Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Fremont Central Park		Fremont Central Park	
Alignment Cost				FREMONT CP (LOW BRIDGE)		FREMONT CP (TUBE)	
Track				**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		13.73		15.27	
1	Double Track Section - At Grade	km	$993,167	7.11	$7,061,416	3.55	$3,525,742
2	Double Track Section - On Structure	km	$1,878,243	1.15	$2,159,979	6.25	$11,739,016
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	4.69	$8,808,958	4.69	$8,808,958
4	Double Track Section - In Trench	km	$1,878,243	0.78	$1,465,029	0.78	$1,465,029
	Single Track Section - Total	km		1.50		1.50	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	3.00	$2,817,364	3.00	$2,817,364
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
11	Regional Rail Bay Crossing Estimate	Lump Sum		5.00	$322,767,859	5.00	$702,953,999
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	0	$0	0	$0
3	Fill	m3	$9	0	$0	0	$0
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	8.41	$855,573	5.06	$514,768
8	Special Drainage Facilities	5% of Earthwork			$42,779		$25,738
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	1.05	$14,420,630	2.55	$35,021,530
2	High Structure	km	$16,480,720	0.10	$1,648,072	3.70	$60,978,665
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.10	$2,311,923	0.10	$2,311,923
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	1.50	$83,196,803	1.50	$83,196,803
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	4.69	$225,699,876	4.69	$225,699,876
14	Trench Short	km	$49,668,587	0.78	$38,741,498	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	6.19	$11,955,132	6.19	$11,955,132
17	Retaining Walls	km	$4,399,945	1.16	$5,103,937	1.56	$6,863,915
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	4.00	$68,669,667	4.00	$68,669,667
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	9.00	$161,373,718	9.00	$161,373,718
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	5.91	$4,022,841	5.90	$4,013,656
7	Major Utility Relocation - Suburban	km	$273,407	4.60	$1,257,399	4.59	$1,254,528
8	Major Utility Relocation - Undeveloped	km	$13,988	5.48	$76,586	5.46	$76,411
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	13.35	$36,547,070	13.32	$36,464,942
	Suburban	hectare	$479,081	9.35	$4,477,015	9.32	$4,466,954
	Undeveloped	hectare	$342,201	10.68	$3,654,706	10.66	$3,646,493
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$20,553,210		$22,143,615
System Elements							
1	Signaling (ATC)	km	$845,654	15.23	$12,879,314	16.77	$14,181,622
2	Communications (w/Fiber Optic Backbone)	km	$699,413	15.23	$10,652,064	16.77	$11,729,161
3	Wayside Protection System	km	$67,144	15.23	$1,022,598	16.77	$1,125,999
Electrification Items							
1	Traction Power Supply	km	$432,365	15.23	$6,584,912	16.77	$7,250,754
2	Traction Power Distribution	km	$806,233	15.23	$12,278,925	16.77	$13,520,523
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$191,336,443		$205,234,838
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$187,584,748		$201,210,625
Total Construction					$685,106,991		$738,120,497
Total Construction and Right of Way (Includes Environmental Mitigation)					$750,338,992		$804,842,501
Grand Total					$1,452,028,043		$1,914,241,964

High-Speed Alignment Alternatives

San Francisco Bay Crossings Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Dumbarton Bay Crossing to Don Edwards		Dumbarton Bay Crossing to Don Edwards	
	Alignment Cost			DUMBARTON 2 (LOW BRIDGE)		DUMBARTON 2 (TUBE)	
	Track			Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		8.00		8.00	
1	Double Track Section - At Grade	km	$993,167	0.00	$0	0.52	$516,447
2	Double Track Section - On Structure	km	$1,878,243	8.00	$15,025,941	6.65	$12,490,313
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.83	$1,558,941
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
11	Regional Rail Bay Crossing Estimate	Lump Sum		5.00	$322,767,859	5.00	$702,953,999
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	0	$0	0	$0
3	Fill	m3	$9	107,820	$959,773	137,820	$1,226,822
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	0.00	$0	1.30	$132,253
8	Special Drainage Facilities	5% of Earthwork			$47,989		$67,954
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	0.00	$0	1.20	$16,480,720
2	High Structure	km	$16,480,720	8.00	$131,845,761	5.35	$88,171,853
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.10	$2,887,673
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.83	$41,224,927
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	3.50	$2,381,388	3.50	$2,381,388
7	Major Utility Relocation - Suburban	km	$273,407	6.28	$1,716,012	6.28	$1,716,012
8	Major Utility Relocation - Undeveloped	km	$13,988	1.21	$16,884	1.21	$16,884
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	5.33	$14,602,402	5.33	$14,602,402
	Suburban	hectare	$479,081	11.22	$5,375,772	11.22	$5,375,772
	Undeveloped	hectare	$342,201	1.84	$629,479	1.84	$629,479
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$5,244,006		$5,750,360
	System Elements						
1	Signaling (ATC)	km	$845,654	8.00	$6,765,234	8.00	$6,765,234
2	Communications (w/Fiber Optic Backbone)	km	$699,413	8.00	$5,595,306	8.00	$5,595,306
3	Wayside Protection System	km	$67,144	8.00	$537,149	8.00	$537,149
	Electrification Items						
1	Traction Power Supply	km	$432,365	8.00	$3,458,917	8.00	$3,458,917
2	Traction Power Distribution	km	$806,233	8.00	$6,449,862	8.00	$6,449,862
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$51,166,228		$55,599,350
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$50,162,969		$54,509,167
	Total Construction				$174,800,215		$191,678,655
	Total Construction and Right of Way (Includes Environmental Mitigation)				$200,651,875		$218,036,667
	Grand Total				$624,748,930		$1,031,099,183

High-Speed Train Alignment Alternatives

BNSF North_South Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				North Stockton South to UPRR Connection		BNSF Parallel to UPRR tracks	
	Alignment Cost			BNSF N/S -1		BNSF N/S-2	
	Track			Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		17.50		3.50	
1	Double Track Section - At Grade	km	$993,167	17.50	$17,380,420	3.50	$3,476,084
2	Double Track Section - On Structure	km	$1,878,243	0.00	$0	0.00	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	232,750	$2,071,853	46,550	$414,371
3	Fill	m3	$9	0	$0	0	$0
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	17.50	$1,780,325	3.50	$356,065
8	Special Drainage Facilities	5% of Earthwork			$192,609		$38,522
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	0.00	$0	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.10	$2,887,673	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.15	$3,467,884	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	7.00	$7,655,396	2.00	$2,187,256
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.00	$0	0.00	$0
7	Major Utility Relocation - Suburban	km	$273,407	0.00	$0	0.00	$0
8	Major Utility Relocation - Undeveloped	km	$13,988	17.50	$244,795	3.50	$48,959
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	0.00	$0	0.00	$0
	Suburban	hectare	$479,081	0.00	$0	0.00	$0
	Undeveloped	hectare	$342,201	26.60	$9,102,546	5.32	$1,820,509
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$2,567,103		$494,973
	System Elements						
1	Signaling (ATC)	km	$845,654	17.50	$14,798,949	3.500	$2,959,790
2	Communications (w/Fiber Optic Backbone)	km	$699,413	17.50	$12,239,732	3.500	$2,447,946
3	Wayside Protection System	km	$67,144	17.50	$1,175,014	3.500	$235,003
	Electrification Items						
1	Traction Power Supply	km	$432,365	17.50	$7,566,380	3.500	$1,513,276
2	Traction Power Distribution	km	$806,233	17.50	$14,109,073	3.500	$2,821,815
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$24,796,137		$4,797,715
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$24,309,938		$4,703,642
	Total Construction				$85,570,104		$16,499,086
	Total Construction and Right of Way (Includes Environmental Mitigation)				$97,239,752		$18,814,568
	Grand Total				$146,345,827		$28,315,925

High-Speed Train Alignment Alternatives

BNSF North_South Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Parallel tracks South through Escaton		Escaton South to Amtrak Briggsmore	
	Alignment Cost			BNSF N/S-3		BNSF N/S-4	
	Track			Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		13.55		13.85	
1	Double Track Section - At Grade	km	$993,167	12.00	$11,918,002	11.85	$11,769,027
2	Double Track Section - On Structure	km	$1,878,243	1.55	$2,911,276	2.00	$3,756,485
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	135,660	$1,207,594	102,084	$908,713
3	Fill	m3	$9	116,375	$1,035,926	2,194,500	$19,534,613
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	10.85	$1,103,801	8.45	$859,643
8	Special Drainage Facilities	5% of Earthwork			$167,366		$1,065,148
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	1.55	$21,287,597	2.00	$27,467,867
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.10	$2,887,673
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.05	$1,155,961
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	1.15	$5,059,937	1.20	$5,279,934
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	1.00	$17,167,417	2.00	$34,334,834
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	8.00	$8,749,024	3.00	$3,280,884
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	1.08	$737,487	2.22	$1,510,351
7	Major Utility Relocation - Suburban	km	$273,407	2.03	$555,700	0.69	$188,651
8	Major Utility Relocation - Undeveloped	km	$13,988	10.43	$145,947	10.94	$153,032
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	1.65	$4,511,578	3.37	$9,225,740
	Suburban	hectare	$479,081	3.09	$1,479,882	1.05	$503,035
	Undeveloped	hectare	$342,201	15.86	$5,426,965	16.63	$5,690,802
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$3,320,266		$4,609,095
	System Elements						
1	Signaling (ATC)	km	$845,654	13.550	$11,458,615	13.850	$11,712,311
2	Communications (w/Fiber Optic Backbone)	km	$699,413	13.550	$9,477,050	13.850	$9,686,874
3	Wayside Protection System	km	$67,144	13.550	$909,797	13.850	$929,940
	Electrification Items						
1	Traction Power Supply	km	$432,365	13.550	$5,858,540	13.850	$5,988,249
2	Traction Power Distribution	km	$806,233	13.550	$10,924,454	13.850	$11,166,324
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$31,980,626		$44,284,623
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$31,353,555		$43,416,297
	Total Construction				$110,675,530		$153,636,515
	Total Construction and Right of Way (Includes Environmental Mitigation)				$125,414,222		$173,665,187
	Grand Total				$188,748,403		$261,366,107

High-Speed Train Alignment Alternatives

BNSF North_South Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Amtrak Briggsmore to UPRR/BNSF Connection		UPRR/BNSF Connection ot Atwater	
	Alignment Cost			BNSF N/S-5		BNSF N/S-6	
	Track			Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		39.85		6.30	
1	Double Track Section - At Grade	km	$993,167	37.45	$37,194,099	6.30	$6,256,951
2	Double Track Section - On Structure	km	$1,878,243	2.40	$4,507,782	0.00	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	443,778	$3,950,345	83,790	$745,867
3	Fill	m3	$9	251,550	$2,239,203	0	$0
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	34.75	$3,535,216	6.30	$640,917
8	Special Drainage Facilities	5% of Earthwork			$486,238		$69,339
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	2.40	$32,961,440	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.20	$5,775,347	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.25	$5,779,806	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	9.00	$154,506,751	2.00	$34,334,834
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	13.00	$14,217,164	2.00	$2,187,256
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.00	$0	0.00	$0
7	Major Utility Relocation - Suburban	km	$273,407	5.98	$1,634,974	1.89	$516,739
8	Major Utility Relocation - Undeveloped	km	$13,988	33.87	$473,783	4.41	$61,688
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	0.00	$0	0.00	$0
	Suburban	hectare	$479,081	9.09	$4,354,849	2.87	$1,376,401
	Undeveloped	hectare	$342,201	51.49	$17,619,927	6.70	$2,292,746
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$11,426,006		$1,883,211
System Elements							
1	Signaling (ATC)	km	$845,654	39.850	$33,699,321	6.300	$5,327,622
2	Communications (w/Fiber Optic Backbone)	km	$699,413	39.850	$27,871,619	6.300	$4,406,304
3	Wayside Protection System	km	$67,144	39.850	$2,675,675	6.300	$423,005
Electrification Items							
1	Traction Power Supply	km	$432,365	39.850	$17,229,728	6.300	$2,723,897
2	Traction Power Distribution	km	$806,233	39.850	$32,128,375	6.300	$5,079,266
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$105,638,251		$17,423,141
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$103,566,913		$17,081,511
Total Construction					$380,866,869		$62,773,685
Total Construction and Right of Way (Includes Environmental Mitigation)					$414,267,652		$68,326,043
Grand Total					$623,472,816		$102,830,695

High-Speed Train Alignment Alternatives

BNSF North_South Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Atwater to Downtown Merced		Merced South to UPRR Connection	
	Alignment Cost			**BNSF N/S-7**		**BNSF N/S-8**	
	Track			**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		17.00		8.00	
1	Double Track Section - At Grade	km	$993,167	17.00	$16,883,837	8.00	$7,945,335
2	Double Track Section - On Structure	km	$1,878,243	0.00	$0	0.00	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	217,324	$1,934,536	162,810	$1,449,273
3	Fill	m3	$9	0	$0	0	$0
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	14.75	$1,500,559	4.25	$432,365
8	Special Drainage Facilities	5% of Earthwork			$171,755		$94,082
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	0.00	$0	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.15	$3,467,884	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	11.00	$188,841,585	7.00	$120,171,918
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	3.00	$3,280,884	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	2.04	$1,387,890	2.24	$1,523,958
7	Major Utility Relocation - Suburban	km	$273,407	1.36	$371,834	4.80	$1,312,354
8	Major Utility Relocation - Undeveloped	km	$13,988	11.39	$159,326	0.96	$13,429
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	3.10	$8,486,586	3.40	$9,307,868
	Suburban	hectare	$479,081	2.07	$991,698	7.30	$3,497,294
	Undeveloped	hectare	$342,201	17.31	$5,924,525	1.46	$499,613
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$7,993,915		$4,672,475
	System Elements						
1	Signaling (ATC)	km	$845,654	17.000	$14,376,122	8.000	$6,765,234
2	Communications (w/Fiber Optic Backbone)	km	$699,413	17.000	$11,890,026	8.000	$5,595,306
3	Wayside Protection System	km	$67,144	17.000	$1,141,442	8.000	$537,149
	Electrification Items						
1	Traction Power Supply	km	$432,365	17.000	$7,350,198	8.000	$3,458,917
2	Traction Power Distribution	km	$806,233	17.000	$13,705,957	8.000	$6,449,862
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$73,914,443		$44,300,240
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$72,465,140		$43,431,608
	Total Construction				$266,463,835		$155,749,181
	Total Construction and Right of Way (Includes Environmental Mitigation)				$289,860,559		$173,726,431
	Grand Total				$436,240,142		$261,458,279

High-Speed Train Alignment Alternatives

BNSF North_South Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				UPRR Connection East to Castle Connection		Caslte Connection to Henry Miller Wye	
	Alignment Cost			BNSF N/S-9		BNSF N/S-10	
Track				Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		17.66		13.44	
1	Double Track Section - At Grade	km	$993,167	17.66	$17,536,347	13.44	$13,351,142
2	Double Track Section - On Structure	km	$1,878,243	0.00	$0	0.00	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	234,744	$2,089,603	356,440	$3,172,895
3	Fill	m3	$9	0	$0	0	$0
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	17.65	$1,795,585	13.44	$1,367,595
8	Special Drainage Facilities	5% of Earthwork			$194,259		$227,024
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	0.00	$0	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.10	$2,887,673
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.15	$3,467,884	0.15	$3,467,884
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	1.00	$17,167,417	1.00	$17,167,417
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	9.00	$9,842,652	6.00	$6,561,768
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.00	$0	0.00	$0
7	Major Utility Relocation - Suburban	km	$273,407	0.71	$193,135	1.08	$295,280
8	Major Utility Relocation - Undeveloped	km	$13,988	16.95	$237,101	12.36	$172,895
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	0.00	$0	0.00	$0
	Suburban	hectare	$479,081	1.07	$514,533	1.63	$780,903
	Undeveloped	hectare	$342,201	25.77	$8,818,519	18.79	$6,429,956
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$3,085,821		$2,609,850
System Elements							
1	Signaling (ATC)	km	$845,654	17.657	$14,931,717	13.443	$11,368,130
2	Communications (w/Fiber Optic Backbone)	km	$699,413	17.657	$12,349,540	13.443	$9,402,213
3	Wayside Protection System	km	$67,144	17.657	$1,185,556	13.443	$902,612
Electrification Items							
1	Traction Power Supply	km	$432,365	17.657	$7,634,261	13.443	$5,812,277
2	Traction Power Distribution	km	$806,233	17.657	$14,235,652	13.443	$10,838,187
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$29,396,293		$24,688,003
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$28,819,896		$24,203,925
Total Construction					$102,860,709		$86,994,992
Total Construction and Right of Way (Includes Environmental Mitigation)					$115,279,582		$96,815,700
Grand Total					$173,495,771		$145,707,628

High-Speed Train Alignment Alternatives

BNSF North_South Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Henry Miller Wye		Stockton to Manteca (BNSF-UPRR X-2 , MC-3)	
	Alignment Cost			**BNSF N/S-11**		**BNSF-UP X-1**	
	Track			**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		10.90		17.05	
1	Double Track Section - At Grade	km	$993,167	10.90	$10,825,519	16.40	$16,287,936
2	Double Track Section - On Structure	km	$1,878,243	0.00	$0	0.65	$1,220,858
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	145,634	$1,296,379	179,224	$1,595,385
3	Fill	m3	$9	0	$0	236,075	$2,101,451
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	10.90	$1,108,888	13.85	$1,409,000
8	Special Drainage Facilities	5% of Earthwork			$120,263		$255,292
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	0.00	$0	0.70	$9,613,753
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.10	$2,887,673
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.15	$3,467,884	0.30	$6,935,768
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	2.95	$12,979,839
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	3.00	$3,280,884	6.00	$6,561,768
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.00	$0	3.41	$2,319,954
7	Major Utility Relocation - Suburban	km	$273,407	0.00	$0	0.00	$0
8	Major Utility Relocation - Undeveloped	km	$13,988	10.90	$152,472	13.64	$190,800
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	0.00	$0	5.18	$14,189,023
	Suburban	hectare	$479,081	0.00	$0	0.00	$0
	Undeveloped	hectare	$342,201	16.57	$5,670,270	20.73	$7,094,852
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$1,539,783		$3,388,973
	System Elements						
1	Signaling (ATC)	km	$845,654	10.900	$9,217,631	17.050	$14,418,405
2	Communications (w/Fiber Optic Backbone)	km	$699,413	10.900	$7,623,605	17.050	$11,924,996
3	Wayside Protection System	km	$67,144	10.900	$731,866	17.050	$1,144,800
	Electrification Items						
1	Traction Power Supply	km	$432,365	10.900	$4,712,774	17.050	$7,371,816
2	Traction Power Distribution	km	$806,233	10.900	$8,787,937	17.050	$13,746,269
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$14,926,720		$35,097,846
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$14,634,039		$34,409,653
	Total Construction				$51,326,102		$112,965,762
	Total Construction and Right of Way (Includes Environmental Mitigation)				$58,536,155		$137,638,610
	Grand Total				$88,096,913		$207,146,109

High-Speed Train Alignment Alternatives

BNSF North_South Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Manteca to Ripon		From BNSF southeast to Casle AFB	
	Alignment Cost			BNSF-UP X-2		BNSF Castle-1	
	Track			Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		9.35		17.60	
1	Double Track Section - At Grade	km	$993,167	8.85	$8,789,527	17.60	$17,479,737
2	Double Track Section - On Structure	km	$1,878,243	0.50	$939,121	0.00	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	93,100	$828,741	234,080	$2,083,692
3	Fill	m3	$9	118,050	$1,050,837	0	$0
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	7.00	$712,130	8.00	$813,863
8	Special Drainage Facilities	5% of Earthwork			$129,585		$144,878
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	0.50	$6,866,967	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.15	$3,467,884
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	1.70	$7,479,907	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	3.00	$19,456,406	1.00	$6,485,469
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	1.00	$1,093,628	9.00	$9,842,652
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	1.40	$954,175	0.88	$598,698
7	Major Utility Relocation - Suburban	km	$273,407	3.18	$869,161	0.00	$0
8	Major Utility Relocation - Undeveloped	km	$13,988	4.77	$66,703	16.72	$233,884
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	2.13	$5,836,581	1.34	$3,662,920
	Suburban	hectare	$479,081	4.83	$2,314,921	0.00	$0
	Undeveloped	hectare	$342,201	7.25	$2,480,273	25.41	$8,696,695
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$2,276,758		$2,739,750
System Elements							
1	Signaling (ATC)	km	$845,654	9.350	$7,906,867	17.600	$14,883,515
2	Communications (w/Fiber Optic Backbone)	km	$699,413	9.350	$6,539,514	17.600	$12,309,674
3	Wayside Protection System	km	$67,144	9.350	$627,793	17.600	$1,181,729
Electrification Items							
1	Traction Power Supply	km	$432,365	9.350	$4,042,609	17.600	$7,609,616
2	Traction Power Distribution	km	$806,233	9.350	$7,538,276	17.600	$14,189,697
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$22,644,122		$27,138,209
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$22,200,120		$26,606,087
Total Construction					$75,891,947		$91,324,985
Total Construction and Right of Way (Includes Environmental Mitigation)					$88,800,480		$106,424,350
Grand Total					$133,644,722		$160,168,647

High-Speed Train Alignment Alternatives

BNSF North_South Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Castle AFB South to BNSF Connect		BNSF South of Castle to UPRR Connect	
	Alignment Cost			BNSF Castle-2		BNSF Castle-3	
	Track			Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		10.52		8.02	
1	Double Track Section - At Grade	km	$993,167	0.00	$0	0.00	$0
2	Double Track Section - On Structure	km	$1,878,243	6.68	$12,550,417	4.94	$9,271,005
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	2.63	$4,932,265	2.41	$4,532,199
4	Double Track Section - In Trench	km	$1,878,243	1.21	$2,280,186	0.67	$1,264,057
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	64,504	$574,190	508,725	$4,528,478
3	Fill	m3	$9	48,877	$435,085	0	$0
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	0.00	$0	0.00	$0
8	Special Drainage Facilities	5% of Earthwork			$50,464		$226,424
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	0.65	$8,927,057	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.05	$1,155,961	0.05	$1,155,961
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	2.42	$10,647,868	1.34	$5,895,927
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	4.00	$68,669,667	1.00	$17,167,417
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	11.00	$71,340,154
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	2.00	$2,187,256	8.00	$8,749,024
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	1.58	$1,073,574	1.76	$1,200,389
7	Major Utility Relocation - Suburban	km	$273,407	2.10	$575,248	1.92	$526,254
8	Major Utility Relocation - Undeveloped	km	$13,988	6.84	$95,652	4.33	$60,580
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	2.40	$6,567,522	2.68	$7,342,265
	Suburban	hectare	$479,081	3.20	$1,532,102	2.93	$1,401,792
	Undeveloped	hectare	$342,201	10.39	$3,556,837	6.58	$2,252,709
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$4,324,533		$4,463,612
	System Elements						
1	Signaling (ATC)	km	$845,654	10.522	$8,897,974	8.022	$6,783,838
2	Communications (w/Fiber Optic Backbone)	km	$699,413	10.522	$7,359,227	8.022	$5,610,693
3	Wayside Protection System	km	$67,144	10.522	$706,486	8.022	$538,627
	Electrification Items						
1	Traction Power Supply	km	$432,365	10.522	$4,549,340	8.022	$3,468,429
2	Traction Power Distribution	km	$806,233	10.522	$8,483,181	8.022	$6,467,599
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$40,833,683		$41,883,096
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$40,033,023		$41,061,859
	Total Construction				$144,151,097		$148,787,057
	Total Construction and Right of Way (Includes Environmental Mitigation)				$160,132,091		$164,247,435
	Grand Total				$240,998,798		$247,192,389

High-Speed Train Alignment Alternatives

BNSF North_South Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Castle Air Force Base Station to Avenue 1 (BNSF N/S-7)		Atwater to Beachwood Dr	
Alignment Cost				**BN-BN CASTLE**		**BNSF Castle-UP**	
Track				**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		10.69		8.02	
1	Double Track Section - At Grade	km	$993,167	8.49	$8,428,014	0.00	$0
2	Double Track Section - On Structure	km	$1,878,243	2.20	$4,132,134	4.94	$9,271,005
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	2.41	$4,532,199
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.67	$1,264,057
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583		$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	89,108	$793,206	75,144	$668,904
3	Fill	m3	$9	107,730	$958,972	0	$0
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	0.00	$0	0.00	$0
8	Special Drainage Facilities	5% of Earthwork			$87,609		$33,445
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	1.10	$15,107,327	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.10	$2,887,673	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.50	$11,559,613
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	1.34	$5,895,927
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	8.00	$137,339,335	3.00	$51,502,250
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	3.00	$3,280,884	2.00	$2,187,256
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.00	$0	1.52	$1,036,700
7	Major Utility Relocation - Suburban	km	$273,407	0.00	$0	0.00	$0
8	Major Utility Relocation - Undeveloped	km	$13,988	0.00	$0	6.50	$90,871
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	0.00	$0	2.32	$6,340,301
	Suburban	hectare	$479,081	0.00	$0	0.00	$0
	Undeveloped	hectare	$342,201	0.00	$0	9.87	$3,378,892
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$6,104,367		$3,327,342
System Elements							
1	Signaling (ATC)	km	$845,654	10.686	$9,036,661	8.022	$6,783,838
2	Communications (w/Fiber Optic Backbone)	km	$699,413	10.686	$7,473,930	8.022	$5,610,693
3	Wayside Protection System	km	$67,144	10.686	$717,497	8.022	$538,627
Electrification Items							
1	Traction Power Supply	km	$432,365	10.686	$4,620,248	8.022	$3,468,429
2	Traction Power Distribution	km	$806,233	10.686	$8,615,403	8.022	$6,467,599
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$53,443,731		$31,609,277
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$52,395,815		$30,989,487
Total Construction					$203,478,893		$110,911,413
Total Construction and Right of Way (Includes Environmental Mitigation)					$209,583,260		$123,957,948
Grand Total					$315,422,806		$186,556,712

High-Speed Train Alignment Alternatives

UPRR North-South Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				French Camp to Lathrop		Lathrop through Manteca	
Alignment Cost				UPRR N/S-1		UPRR N/S-2	
Track				Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		8.00		8.70	
1	Double Track Section - At Grade	km	$993,167	7.45	$7,399,093	8.50	$8,441,918
2	Double Track Section - On Structure	km	$1,878,243	0.55	$1,033,033	0.20	$375,649
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	93,100	$828,741	116,120	$1,033,657
3	Fill	m3	$9	29,925	$266,381	60,010	$534,186
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	7.10	$722,303	7.95	$808,776
8	Special Drainage Facilities	5% of Earthwork			$90,871		$118,831
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	0.55	$7,553,663	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.90	$14,832,648
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.10	$2,311,923	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	3.50	$15,399,809	0.55	$2,419,970
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	2.00	$34,334,834
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	3.00	$19,456,406
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	2.00	$2,187,256	3.00	$3,280,884
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Building Items							
1	Intermediate Stations	LS		0.00	$0	0.00	$0
2	Terminal Stations	LS		0.00	$0	0.00	$0
3	Parking requirements	space		0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	1.28	$870,833	0.87	$591,894
7	Major Utility Relocation - Suburban	km	$273,407	0.40	$109,363	2.73	$746,401
8	Major Utility Relocation - Undeveloped	km	$13,988	6.32	$88,406	5.13	$71,760
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	1.95	$5,338,336	1.32	$3,613,643
	Suburban	hectare	$479,081	0.61	$292,240	4.14	$1,983,397
	Undeveloped	hectare	$342,201	9.61	$3,288,551	7.80	$2,669,167
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$1,850,044		$3,355,495
System Elements							
1	Signaling (ATC)	km	$845,654	8.00	$6,765,234	8.70	$7,357,192
2	Communications (w/Fiber Optic Backbone)	km	$699,413	8.00	$5,595,306	8.70	$6,084,896
3	Wayside Protection System	km	$67,144	8.00	$537,149	8.70	$584,150
Electrification Items							
1	Traction Power Supply	km	$432,365	8.00	$3,458,917	8.70	$3,761,572
2	Traction Power Distribution	km	$806,233	8.00	$6,449,862	8.70	$7,014,225
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$18,471,515		$31,485,245
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$18,109,329		$30,867,888
Total Construction					$61,668,144		$111,849,848
Total Construction and Right of Way (Includes Environmental Mitigation)					$72,437,315		$123,471,550
Grand Total					$109,018,159		$185,824,683

High-Speed Train Alignment Alternatives

UPRR North-South Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Manteca South to BNSF/UPRR		BNSF/UPRR South to Modesto	
Alignment Cost				UPRR N/S-3		UPRR N/S-4	
Track				**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		3.30		18.50	
1	Double Track Section - At Grade	km	$993,167	3.30	$3,277,451	18.50	$18,373,587
2	Double Track Section - On Structure	km	$1,878,243	0.00	$0	0.00	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	72,480	$645,190	314,600	$2,800,451
3	Fill	m3	$9	0	$0	19,950	$177,587
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	3.30	$335,718	18.50	$1,882,058
8	Special Drainage Facilities	5% of Earthwork			$49,045		$243,005
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	0.00	$0	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.10	$2,887,673
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	4.00	$68,669,667
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	1.00	$6,485,469
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	1.00	$1,093,628	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Building Items							
1	Intermediate Stations	LS		0.00	$0	0.00	$0
2	Terminal Stations	LS		0.00	$0	0.00	$0
3	Parking requirements	space		0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.00	$0	4.81	$3,272,428
7	Major Utility Relocation - Suburban	km	$273,407	0.00	$0	3.52	$962,393
8	Major Utility Relocation - Undeveloped	km	$13,988	3.30	$46,161	10.18	$142,401
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	0.00	$0	7.31	$20,011,916
	Suburban	hectare	$479,081	0.00	$0	5.34	$2,558,294
	Undeveloped	hectare	$342,201	5.02	$1,717,849	15.47	$5,293,849
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$445,646		$4,759,100
System Elements							
1	Signaling (ATC)	km	$845,654	3.30	$2,790,659	18.50	$15,644,603
2	Communications (w/Fiber Optic Backbone)	km	$699,413	3.30	$2,308,064	18.50	$12,939,146
3	Wayside Protection System	km	$67,144	3.30	$221,574	18.50	$1,242,158
Electrification Items							
1	Traction Power Supply	km	$432,365	3.30	$1,426,803	18.50	$7,998,745
2	Traction Power Distribution	km	$806,233	3.30	$2,660,568	18.50	$14,915,306
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$4,339,681		$48,771,258
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$4,254,589		$47,814,959
Total Construction					$14,854,861		$158,636,675
Total Construction and Right of Way (Includes Environmental Mitigation)					$17,018,356		$191,259,835
Grand Total					$25,612,626		$287,846,051

High-Speed Train Alignment Alternatives

UPRR North-South Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				UPRR Modesto South-Western Option		South Modesto to BNSF Connection	
	Alignment Cost			UPPRR N/S-5b		UPRR N/S-6	
	Track			Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		4.20		20.90	
1	Double Track Section - At Grade	km	$993,167	4.20	$4,171,301	16.15	$16,039,645
2	Double Track Section - On Structure	km	$1,878,243	0.00	$0	4.75	$8,921,652
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	54,480	$484,960	218,642	$1,946,269
3	Fill	m3	$9	272,400	$2,424,802	452,112	$4,024,531
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	4.20	$427,278	14.55	$1,480,213
8	Special Drainage Facilities	5% of Earthwork			$166,852		$372,551
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	0.00	$0	3.20	$43,948,587
2	High Structure	km	$16,480,720	0.00	$0	1.55	$25,545,116
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.15	$4,331,510	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.05	$1,155,961
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	1.60	$7,039,913
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	11.00	$188,841,585	4.00	$68,669,667
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	2.00	$12,970,937
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Building Items						
1	Intermediate Stations	LS		0.00	$0	0.00	$0
2	Terminal Stations	LS		0.00	$0	0.00	$0
3	Parking requirements	space		0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	3.28	$2,231,510	5.23	$3,558,170
7	Major Utility Relocation - Suburban	km	$273,407	0.42	$114,831	1.46	$399,174
8	Major Utility Relocation - Undeveloped	km	$13,988	0.50	$6,994	14.21	$198,773
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	5.00	$13,688,041	7.94	$21,736,609
	Suburban	hectare	$479,081	0.64	$306,612	2.22	$1,063,561
	Undeveloped	hectare	$342,201	0.77	$263,495	21.60	$7,391,541
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$6,455,251		$7,675,592
	System Elements						
1	Signaling (ATC)	km	$845,654	4.20	$3,551,748	20.90	$17,674,174
2	Communications (w/Fiber Optic Backbone)	km	$699,413	4.20	$2,937,536	20.90	$14,617,738
3	Wayside Protection System	km	$67,144	4.20	$282,003	20.90	$1,403,303
	Electrification Items						
1	Traction Power Supply	km	$432,365	4.20	$1,815,931	20.90	$9,036,420
2	Traction Power Distribution	km	$806,233	4.20	$3,386,178	20.90	$16,850,265
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$60,151,547		$74,898,692
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$58,972,104		$73,430,090
	Total Construction				$215,175,019		$255,853,057
	Total Construction and Right of Way (Includes Environmental Mitigation)				$235,888,418		$293,720,359
	Grand Total				$355,012,069		$442,049,140

High-Speed Train Alignment Alternatives

UPRR North-South Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				BNSF Connection South to Merced		Merced South to BNSF Connection	
	Alignment Cost			UPRR N/S-7		UPRR N/S-8	
	Track			Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		33.25		4.75	
1	Double Track Section - At Grade	km	$993,167	29.55	$29,348,081	4.75	$4,717,543
2	Double Track Section - On Structure	km	$1,878,243	3.70	$6,949,497	0.00	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	392,974	$3,498,107	96,474	$858,775
3	Fill	m3	$9	81,462	$725,144	0	$0
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	28.30	$2,879,039	4.75	$483,231
8	Special Drainage Facilities	5% of Earthwork			$355,115		$67,100
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	4.05	$55,622,430	0.00	$0
2	High Structure	km	$16,480,720	2.65	$43,673,908	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.10	$2,887,673	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.30	$6,935,768	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	1.25	$5,499,932	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	3.00	$51,502,250	4.00	$68,669,667
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	1.00	$6,485,469	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	6.00	$6,561,768	2.00	$2,187,256
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Building Items						
1	Intermediate Stations	LS		0.00	$0	0.00	$0
2	Terminal Stations	LS		0.00	$0	0.00	$0
3	Parking requirements	space		0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	4.66	$3,170,377	1.05	$714,355
7	Major Utility Relocation - Suburban	km	$273,407	2.00	$546,814	2.52	$688,986
8	Major Utility Relocation - Undeveloped	km	$13,988	26.60	$372,088	1.19	$16,646
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	7.08	$19,382,266	1.59	$4,352,797
	Suburban	hectare	$479,081	3.03	$1,451,616	3.83	$1,834,882
	Undeveloped	hectare	$342,201	40.43	$13,835,185	1.81	$619,384
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$9,654,085		$2,758,347
	System Elements						
1	Signaling (ATC)	km	$845,654	33.25	$28,118,003	4.75	$4,016,858
2	Communications (w/Fiber Optic Backbone)	km	$699,413	33.25	$23,255,491	4.75	$3,322,213
3	Wayside Protection System	km	$67,144	33.25	$2,232,527	4.75	$318,932
	Electrification Items						
1	Traction Power Supply	km	$432,365	33.25	$14,376,122	4.75	$2,053,732
2	Traction Power Distribution	km	$806,233	33.25	$26,807,239	4.75	$3,829,606
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$93,362,129		$25,885,129
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$91,531,499		$25,377,577
	Total Construction				$321,802,843		$91,944,900
	Total Construction and Right of Way (Includes Environmental Mitigation)				$366,125,996		$101,510,309
	Grand Total				$551,019,624		$152,773,015

High-Speed Train Alignment Alternatives

UPRR North-South Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				BNSF Connection South to Henry Miller Wye		BNSF Henry Miller Wye	
	Alignment Cost			UPRR N/S-9		UPRR N/S-10	
	Track			Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		17.45		15.90	
1	Double Track Section - At Grade	km	$993,167	17.45	$17,330,762	15.25	$15,145,795
2	Double Track Section - On Structure	km	$1,878,243	0.00	$0	0.65	$1,220,858
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	279,084	$2,484,301	203,490	$1,811,391
3	Fill	m3	$9	0	$0	49,210	$438,049
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	17.45	$1,775,238	14.00	$1,424,260
8	Special Drainage Facilities	5% of Earthwork			$212,977		$183,685
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	0.00	$0	0.65	$8,927,057
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.15	$4,331,510
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.30	$6,935,768	0.10	$2,311,923
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	12.50	$54,999,317
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	2.00	$34,334,834
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	6.00	$6,561,768	5.00	$5,468,140
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Building Items						
1	Intermediate Stations	LS		0.00	$0	0.00	$0
2	Terminal Stations	LS		0.00	$0	0.00	$0
3	Parking requirements	space		0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.87	$591,894	0.00	$0
7	Major Utility Relocation - Suburban	km	$273,407	0.00	$0	1.43	$390,972
8	Major Utility Relocation - Undeveloped	km	$13,988	16.58	$231,925	14.47	$202,410
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	1.33	$3,641,019	0.00	$0
	Suburban	hectare	$479,081	0.00	$0	2.18	$1,044,397
	Undeveloped	hectare	$342,201	25.20	$8,623,464	21.99	$7,524,999
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$2,576,137		$5,295,542
	System Elements						
1	Signaling (ATC)	km	$845,654	17.45	$14,756,666	15.90	$13,445,902
2	Communications (w/Fiber Optic Backbone)	km	$699,413	17.45	$12,204,762	15.90	$11,120,671
3	Wayside Protection System	km	$67,144	17.45	$1,171,657	15.90	$1,067,584
	Electrification Items						
1	Traction Power Supply	km	$432,365	17.45	$7,544,762	15.90	$6,874,597
2	Traction Power Distribution	km	$806,233	17.45	$14,068,762	15.90	$12,819,101
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$25,681,525		$48,547,663
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$25,177,966		$47,595,748
	Total Construction				$85,871,242		$176,518,055
	Total Construction and Right of Way (Includes Environmental Mitigation)				$100,711,862		$190,382,993
	Grand Total				$151,571,352		$286,526,405

High-Speed Train Alignment Alternatives

UPRR North-South Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				French Camp to Five Corners (BNSF N/S-2 , BNSF N/S-3)		UPRR Modesto South - Western Option	
	Alignment Cost			UPRR-BNSF X-1		UPRR N/S-5a	
	Track			Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		20.20		4.20	
1	Double Track Section - At Grade	km	$993,167	17.00	$16,883,837	4.20	$4,171,301
2	Double Track Section - On Structure	km	$1,878,243	3.20	$6,010,376	0.00	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	170,240	$1,515,412	59,020	$525,374
3	Fill	m3	$9	1,024,097	$9,116,126	181,600	$1,616,535
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	13.80	$1,403,913	4.20	$427,278
8	Special Drainage Facilities	5% of Earthwork			$601,773		$128,459
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	2.05	$28,154,564	0.00	$0
2	High Structure	km	$16,480,720	1.15	$18,952,828	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.20	$5,775,347
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.15	$3,467,884	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	3.20	$14,079,825	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	11.00	$188,841,585
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	6.00	$6,561,768	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Building Items						
1	Intermediate Stations	LS		0.00	$0	0.00	$0
2	Terminal Stations	LS		0.00	$0	0.00	$0
3	Parking requirements	space		0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	2.42	$1,646,419	2.81	$1,911,751
7	Major Utility Relocation - Suburban	km	$273,407	1.41	$385,504	1.01	$276,141
8	Major Utility Relocation - Undeveloped	km	$13,988	16.36	$228,848	0.38	$5,316
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	3.68	$10,074,398	4.27	$11,689,587
	Suburban	hectare	$479,081	2.15	$1,030,025	1.53	$732,994
	Undeveloped	hectare	$342,201	24.87	$8,510,538	0.57	$195,055
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$4,997,862		$6,469,574
	System Elements						
1	Signaling (ATC)	km	$845,654	20.20	$17,082,216	4.20	$3,551,748
2	Communications (w/Fiber Optic Backbone)	km	$699,413	20.20	$14,128,148	4.20	$2,937,536
3	Wayside Protection System	km	$67,144	20.20	$1,356,302	4.20	$282,003
	Electrification Items						
1	Traction Power Supply	km	$432,365	20.20	$8,733,764	4.20	$1,815,931
2	Traction Power Distribution	km	$806,233	20.20	$16,285,902	4.20	$3,386,178
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$48,758,099		$59,858,622
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$47,802,058		$58,684,923
	Total Construction				$166,595,409		$215,652,482
	Total Construction and Right of Way (Includes Environmental Mitigation)				$191,208,232		$234,739,692
	Grand Total				$287,768,389		$353,283,237

High-Speed Train Alignment Alternatives

UPRR North-South Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				BNSF crossing to UPRR - Southeast of Turlock		Southwester Manteca	
	Alignment Cost			UPRR-BNSF X-2		MC-1	
Track				Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		15.15		1.46	
1	Double Track Section - At Grade	km	$993,167	15.15	$15,046,478	1.46	$1,447,044
2	Double Track Section - On Structure	km	$1,878,243	0.00	$0	0.00	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	159,600	$1,420,699	0	$0
3	Fill	m3	$9	435,575	$3,877,325	169,010	$1,504,463
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	15.15	$1,541,253	1.46	$148,225
8	Special Drainage Facilities	5% of Earthwork			$341,964		$82,634
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	0.00	$0	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.15	$4,331,510	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.05	$1,155,961	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	2.91	$12,821,441
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	9.00	$9,842,652	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	0.00	$0	1.00	$1,157,211
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Building Items							
1	Intermediate Stations	LS		0.00	$0	0.00	$0
2	Terminal Stations	LS		0.00	$0	0.00	$0
3	Parking requirements	space		0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.30	$204,102	0.88	$595,976
7	Major Utility Relocation - Suburban	km	$273,407	0.00	$0	0.58	$159,670
8	Major Utility Relocation - Undeveloped	km	$13,988	14.85	$207,726	0.00	$0
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	0.46	$1,259,300	1.33	$3,646,494
	Suburban	hectare	$479,081	0.00	$0	0.89	$425,424
	Undeveloped	hectare	$342,201	22.57	$7,723,476	0.00	$0
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$2,434,783		$662,109
System Elements							
1	Signaling (ATC)	km	$845,654	15.15	$12,811,662	1.46	$1,232,118
2	Communications (w/Fiber Optic Backbone)	km	$699,413	15.15	$10,596,111	1.46	$1,019,045
3	Wayside Protection System	km	$67,144	15.15	$1,017,227	1.46	$97,828
Electrification Items							
1	Traction Power Supply	km	$432,365	15.15	$6,550,323	1.46	$629,955
2	Traction Power Distribution	km	$806,233	15.15	$12,214,426	1.46	$1,174,681
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$23,607,129		$6,835,102
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$23,144,244		$6,701,080
Total Construction					$81,159,418		$22,070,293
Total Construction and Right of Way (Includes Environmental Mitigation)					$92,576,976		$26,804,320
Grand Total					$139,328,349		$40,340,501

High-Speed Train Alignment Alternatives

UPRR North-South Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Southeastern Manteca		Eastern Manteca UPRR South to BNSF	
Alignment Cost				MC-2		MC-3	
Track				Quantities	Item Cost	Quantities	Item Cost
	Double Track Section-Total	km		1.83		9.17	
1	Double Track Section - At Grade	km	$993,167	1.83	$1,818,489	9.17	$9,105,354
2	Double Track Section - On Structure	km	$1,878,243	0.00	$0	0.00	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	0	$0	5,453	$48,543
3	Fill	m3	$9	212,400	$1,890,705	1,064,923	$9,479,540
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	1.83	$186,273	9.17	$932,687
8	Special Drainage Facilities	5% of Earthwork			$103,849		$523,038
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	0.00	$0	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	3.66	$16,112,600	4.00	$17,599,781
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	20.00	$358,608,262
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	1.00	$1,157,211	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Building Items							
1	Intermediate Stations	LS		0.00	$0	0.00	$0
2	Terminal Stations	LS		0.00	$0	0.00	$0
3	Parking requirements	space		0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	0.37	$249,004	3.30	$2,245,933
7	Major Utility Relocation - Suburban	km	$273,407	1.46	$400,268	4.95	$1,353,857
8	Major Utility Relocation - Undeveloped	km	$13,988	0.00	$0	0.92	$12,827
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	0.56	$1,522,110	5.02	$13,737,318
	Suburban	hectare	$479,081	2.23	$1,065,956	7.53	$3,606,045
	Undeveloped	hectare	$342,201	0.00	$0	1.39	$477,028
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$814,147		$12,781,381
System Elements							
1	Signaling (ATC)	km	$845,654	1.83	$1,548,393	9.17	$7,752,958
2	Communications (w/Fiber Optic Backbone)	km	$699,413	1.83	$1,280,626	9.17	$6,412,221
3	Wayside Protection System	km	$67,144	1.83	$122,940	9.17	$615,573
Electrification Items							
1	Traction Power Supply	km	$432,365	1.83	$791,660	9.17	$3,963,918
2	Traction Power Distribution	km	$806,233	1.83	$1,476,212	9.17	$7,391,542
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$7,787,812		$116,445,191
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$7,635,110		$114,161,952
Total Construction					$27,138,228		$426,046,035
Total Construction and Right of Way (Includes Environmental Mitigation)					$30,540,441		$456,647,808
Grand Total					$45,963,364		$687,254,951

High-Speed Train Alignment Alternatives

UPRR North-South Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Manteca to Escaton Wye		Northern Escaton Wye to BNSF	
Alignment Cost				MC-4		MC-5	
Track				**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		4.28		4.30	
1	Double Track Section - At Grade	km	$993,167	4.28	$4,248,768	4.30	$4,270,617
2	Double Track Section - On Structure	km	$1,878,243	0.00	$0	0.00	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
Earthwork and Related Items							
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	0	$0	0	$0
3	Fill	m3	$9	183,960	$1,637,543	92,410	$822,599
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	4.28	$435,213	4.30	$437,451
8	Special Drainage Facilities	5% of Earthwork			$103,638		$63,003
Structures/Tunnels/Walls							
1	Standard Structure	km	$13,733,933	0.00	$0	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	7.04	$30,975,615
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
Grade Separations							
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	0.00	$0
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	1.00	$1,157,211	5.00	$5,786,055
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
Building Items							
1	Intermediate Stations	LS		0.00	$0	0.00	$0
2	Terminal Stations	LS		0.00	$0	0.00	$0
3	Parking requirements	space		0.00	$0	0.00	$0
Rail and Utility Relocation							
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	3.38	$2,300,360	1.94	$1,316,455
7	Major Utility Relocation - Suburban	km	$273,407	0.00	$0	0.00	$0
8	Major Utility Relocation - Undeveloped	km	$13,988	0.90	$12,573	2.37	$33,082
Right-of-Way							
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	5.14	$14,068,569	2.94	$8,051,306
	Suburban	hectare	$479,081	0.00	$0	0.00	$0
	Undeveloped	hectare	$342,201	1.37	$467,447	3.59	$1,228,501
Environmental Mitigation							
	Environmental Mitigation	3% of Line Cost			$662,732		$1,678,901
System Elements							
1	Signaling (ATC)	km	$845,654	4.28	$3,617,709	4.30	$3,636,313
2	Communications (w/Fiber Optic Backbone)	km	$699,413	4.28	$2,992,090	4.30	$3,007,477
3	Wayside Protection System	km	$67,144	4.28	$287,241	4.30	$288,718
Electrification Items							
1	Traction Power Supply	km	$432,365	4.28	$1,849,656	4.30	$1,859,168
2	Traction Power Distribution	km	$806,233	4.28	$3,449,064	4.30	$3,466,801
Program Implementation Costs (PER SCREENING)							
	Program Implementation Costs	25.5% of Total Cost & Procurement			$9,508,902		$17,065,126
Contingencies (PER SCREENING)							
	Contingencies	25% of Total Construction Cost			$9,322,453		$16,730,516
Total Construction					$22,091,064		$55,963,354
Total Construction and Right of Way (Includes Environmental Mitigation)					$37,289,811		$66,922,062
Grand Total					$56,121,166		$100,717,704

High-Speed Train Alignment Alternatives

UPRR North-South Segment Breakdown

	COST ELEMENTS	UNIT	UNIT PRICE	QUANTITIES			
				Southern Escaton Wye to BNSF (Part 1)		Southern Escaton Wye to BNSF (Part 2)	
	Alignment Cost			MC-6		MC-7	
	Track			**Quantities**	**Item Cost**	**Quantities**	**Item Cost**
	Double Track Section-Total	km		22.84		14.17	
1	Double Track Section - At Grade	km	$993,167	22.84	$22,685,917	14.17	$14,070,195
2	Double Track Section - On Structure	km	$1,878,243	0.00	$0	0.00	$0
3	Double Track Section - In Tunnel or Subway	km	$1,878,243	0.00	$0	0.00	$0
4	Double Track Section - In Trench	km	$1,878,243	0.00	$0	0.00	$0
	Single Track Section - Total	km		0.00		0.00	
5	Single Track Section - At Grade	km	$496,583	0.00	$0	0.00	$0
6	Single Track Section - On Strcuture	km	$939,121	0.00	$0	0.00	$0
7	Single Track Section - In Tunnel or Subway	km	$939,121	0.00	$0	0.00	$0
8	Single Track Section - In Trench	km	$939,121	0.00	$0	0.00	$0
9	Freight Double Track - At Grade	km	$993,167	0.00	$0	0.00	$0
10	Freight Single Track - At Grade	km	$496,583	0.00	$0	0.00	$0
	Earthwork and Related Items						
1	Site Preparation - Undeveloped	hectare	$12,081	0.00	$0	0.00	$0
2	Cut	m3	$9	0	$0	0	$0
3	Fill	m3	$9	365,470	$3,253,276	565,316	$5,032,226
4	Borrow	m3	$13.35	0.00	$0	0.00	$0
5	Spoil	m3	$0.00	0.00	$0	0.00	$0
6	Cut/Fill Slopes (Landscaping/Erosion Control)	hectare	$8,075	0.00	$0	0.00	$0
7	Fencing (Both Sides of R/W)	km	$101,733	22.84	$2,323,782	14.17	$1,441,249
8	Special Drainage Facilities	5% of Earthwork			$278,853		$323,674
	Structures/Tunnels/Walls						
1	Standard Structure	km	$13,733,933	0.00	$0	0.00	$0
2	High Structure	km	$16,480,720	0.00	$0	0.00	$0
3	Long Span Structure	km	$37,577,568	0.00	$0	0.00	$0
4	Waterway Crossing - Primary	km	$28,876,734	0.00	$0	0.00	$0
5	Waterway Crossing - Secondary (Irrigation/Canal Crossing)	km	$23,119,226	0.00	$0	0.00	$0
6	Twin Single Track Drill & Blast (<6 Miles)	km	$75,040,254	0.00	$0	0.00	$0
7	Twin Single Track TBM (<6 Miles)	km	$55,464,535	0.00	$0	0.00	$0
8	Twin Single Track TBM w/3rd Tube (>6 Miles)	km	$78,846,643	0.00	$0	0.00	$0
9	Double Track Drill & Blast	km	$83,740,573	0.00	$0	0.00	$0
10	Double Track Mined (Soft Soil)	km	$96,247,282	0.00	$0	0.00	$0
11	Seismic Chamber (Drill & Blast/Mined)	ea	$94,803,899	0.00	$0	0.00	$0
12	Crossovers	ea	$94,803,899	0.00	$0	0.00	$0
13	Cut & Cover Double Track Tunnel	km	$48,123,641	0.00	$0	0.00	$0
14	Trench Short	km	$49,668,587	0.00	$0	0.00	$0
15	Trench Long	km	$39,272,836	0.00	$0	0.00	$0
16	Mechanical & Electrical for Tunnels	km	$1,931,362	0.00	$0	0.00	$0
17	Retaining Walls	km	$4,399,945	0.00	$0	0.00	$0
18	Containment Walls	km	$1,500,559	0.00	$0	0.00	$0
19	Single Track Cut and Cover Subway	km	$30,077,276	0.00	$0	0.00	$0
	Grade Separations						
1	Sreet Overcrossing HSR - Urban	EA	$17,167,417	0.00	$0	0.00	$0
2	Sreet Overcrossing HSR - Suburban	EA	$6,485,469	0.00	$0	0.00	$0
3	Sreet Overcrossing HSR - Undeveloped	EA	$1,093,628	0.00	$0	0.00	$0
4	Sreet Undercrossing HSR - Urban	EA	$17,930,413	0.00	$0	9.00	$161,373,718
5	Sreet Undercrossing HSR - Suburban	EA	$6,866,967	0.00	$0	0.00	$0
6	Sreet Undercrossing HSR - Undeveloped	EA	$1,157,211	18.00	$20,829,799	0.00	$0
7	Street Bridging HSR Trench	EA	$0	0.00	$0	0.00	$0
8	Minor crossing closure	EA	$178,032	0.00	$0	0.00	$0
	Building Items						
1	Intermediate Stations	LS		0.00	$0	0.00	$0
2	Terminal Stations	LS		0.00	$0	0.00	$0
3	Parking requirements	space		0.00	$0	0.00	$0
	Rail and Utility Relocation						
1	Single Track Relocation (temporary)	km	$1,271,661	0.00	$0	0.00	$0
2	Single Track Relocation (permanent)	km	$1,271,661	0.00	$0	0.00	$0
3	Single Track Removal	km	$63,372	0.00	$0	0.00	$0
5	Major Utility Relocation - Urban	km	$680,338	1.37	$932,744	0.00	$0
7	Major Utility Relocation - Suburban	km	$273,407	0.23	$62,474	0.00	$0
8	Major Utility Relocation - Undeveloped	km	$13,988	21.24	$297,111	14.17	$198,214
	Right-of-Way						
1	Right-of-Way Required for Each Segment						
	Urban	hectare	$2,737,608	2.08	$5,705,176	0.00	$0
	Suburban	hectare	$479,081	0.35	$166,241	0.00	$0
	Undeveloped	hectare	$342,201	32.29	$11,049,669	21.54	$7,370,324
	Environmental Mitigation						
	Environmental Mitigation	3% of Line Cost			$3,473,464		$6,684,800
	System Elements						
1	Signaling (ATC)	km	$845,654	22.84	$19,316,434	14.17	$11,980,384
2	Communications (w/Fiber Optic Backbone)	km	$699,413	22.84	$15,975,998	14.17	$9,908,588
3	Wayside Protection System	km	$67,144	22.84	$1,533,696	14.17	$951,224
	Electrification Items						
1	Traction Power Supply	km	$432,365	22.84	$9,876,072	14.17	$6,125,309
2	Traction Power Distribution	km	$806,233	22.84	$18,415,969	14.17	$11,421,900
	Program Implementation Costs (PER SCREENING)						
	Program Implementation Costs	25.5% of Total Cost & Procurement			$34,725,052		$60,404,860
	Contingencies (PER SCREENING)						
	Contingencies	25% of Total Construction Cost			$34,044,168		$59,220,451
	Total Construction				$115,782,124		$222,826,680
	Total Construction and Right of Way (Includes Environmental Mitigation)				$136,176,673		$236,881,804
	Grand Total				$204,945,893		$356,507,116

APPENDIX 4-D

CAPITAL COST: HST STATION LOCATION OPTION (SUMMARY AND STATION BREAKDOWN)

Appendix 4-D Summary
High-Speed Train Passenger Station Cost

	Station		EIR/EIS Cost[1]
	Terminal Station		
S1	4th & King Station (Caltrain1-2, Caltrain Urban Tunnel)	ea	$791,939,278
S2	Transbay Transit Center Station (Caltrain1-TB1, Urban - Tunnel)	ea	$786,262,418
S3	West Oakland/7th Street Station (Niles/I-880 1A, Urban - Tunnel)	ea	$611,197,055
S4	12th Street/City Center Station (Niles/I-880 1B, Urban - Tunnel)	ea	$611,197,055
	Intermediate Station		
S5	San Jose Diridon Station (Caltrain 8-Pacheco 1, Urban - Aerial)	ea	$185,051,790
S6	Millbrae/SFO Station (Caltrain 2-3, Urban - At Grade)	ea	$29,076,600
S7	Redwood City Station (Caltrain 3-4, Urban - At Grade)	ea	$67,516,558
S8	Palo Alto (Caltrain 6-7, Urban - At Grade)	ea	$67,516,558
S9	Coliseum/Airport Station (Niles/I-880 2-3, Urban - At-Grade)	ea	$61,735,853
S10	Union City (BART) Station (Niles/I-880 3-4, Urban - Aerial)	ea	$69,853,070
S11	Union City (Shinn) Station (Niles/I-880 4-5, Urban - Aerial)	ea	$310,150,400
S12	Fremont (Warm Springs) Station (Niles/I-880 5-6, Suburban - Aerial)	ea	$156,875,180
S13	Newark Station (Caltrain 2-3, Suburban - Aerial)	ea	$310,150,400
S14	Pleasanton (BART) Station (I-680/580/UPRR 1-2, Suburban - Aerial)	ea	$316,675,328
S15	Pleasanton (I-680/Bernal) Station (UPRR 3-4, Suburban - At Grade)	ea	$72,639,578
S16	Livermore 1 (I-580) Station (I-680/580/UPRR 3-4, Undeveloped - Aerial)	ea	$151,769,468
S17	Livermore 2 (Downtown) Station (UPRR 5-6, Urban - At Grade)	ea	$73,297,263
S18	Livermore 2 (Downtown) Station (UPRR 5-6, Urban - Aerial)	ea	$314,667,658
S19	Livermore (Greenville Road/I-580) Station (I-680/580/UPRR 4-5, Undeveloped - Aerial)	ea	$160,180,913
S20	Livermore (Greenville Road/UPRR) Station	ea	$72,639,578
S21	Tracy 1 (Downtown) Station (UPRR 10-11, Urban - Aerial)	ea	$310,150,400
S22	Tracy 2 (Existing ACE) Station (SUPRR 2-3, Suburban - Aerial)	ea	$314,667,658
S23	Gilroy (Caltrain) Station (Pacheco 2-3, Urban - Aerial)	ea	$148,256,045
S24	Morgan Hill (Caltrain) Station (Pacheco 1-2, Suburban - Aerial)	ea	$284,985,295
S25	Modesto Downtown Station (UPRR N/S 4-5A/B, Urban - At Grade)	ea	$71,428,053
S26	Briggsmore (Amtrak) Station (BNSF N/S 4-5, Suburban - At-Grade)	ea	$71,428,053
S27	Merced Downtown Station (UPRR N/S 7-8, BNSF N/S 7-8, Urban - At-Grade)	ea	$71,428,053
S28	Castle Air Force Base Station (BNSF N/S 6-7, BNSF Castle 1-2, Suburban - At-Grade)	ea	$71,428,053
	Intermediate Station (Local Service Option)		
S29	Union City (Shinn) Station (Niles/I-880 4-5, Urban - Aerial)	ea	$300,146,665
S30	Newark Station (Caltrain 2-3, Suburban - Aerial)	ea	$300,146,665
S31	Pleasanton (BART) Station (I-680/580/UPRR 1-2, Suburban - Aerial)	ea	$297,325,543
S32	Pleasanton (I-680/Bernal) Station (UPRR 3-4, Suburban - At Grade)	ea	$58,118,585
S33	Livermore 1 (I-580) Station (I-680/580/UPRR 3-4, Undeveloped - Aerial)	ea	$132,402,375
S34	Livermore 2 (Downtown) Station (UPRR 5-6, Urban - At Grade)	ea	$58,758,963
S35	Livermore 2 (Downtown) Station (UPRR 5-6, Urban - Aerial)	ea	$300,146,665
S36	Livermore (Greenville Road/I-580) Station (I-680/580/UPRR 4-5, Undeveloped - Aerial)	ea	$140,813,820
S37	Livermore (Greenville Road/UPRR) Station	ea	$58,118,585
S38	Tracy 1 (Downtown) Station (UPRR 10-11, Urban - Aerial)	ea	$300,146,665
S39	Tracy 2 (Existing ACE) Station (SUPRR 2-3, Suburban - Aerial)	ea	$300,146,665

[1] **Estimated Cost including Contingencies and Program Implementation**

HIGH-SPEED TRAIN PASSANGER STATION BREAKDOWN

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Terminal Station
S1 - 4th & King Station (Caltrain 1-2, Caltrain Urban Tunnel)

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	Inspection Platform Side-By-Side w/Passenger Platform						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	12.00	$109,199	
	Site Demolition	HECT	$800,000.00	$945,443.68	12.00	$11,345,324	
							$11,454,523
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	Cut & Cover Structure - Incl. Earthwork, Support System & Structure	HECT	$26,206,000.00	$30,970,371.38	12.00	$371,644,457	
							$371,644,457
6	**Track work**						
	Direct Fixation	M	$800.23	$945.72	8,000	$7,565,724	
	Turnouts, No. 32.7 W. Conc. Ties	EA	$365,000.00	$431,358.68	4	$1,725,435	
	Crossover, No. 32.7 w. Conc. Ties	EA	$750,000.00	$886,353.45	2	$1,772,707	
	Bumping Posts	EA	$50,000.00	$59,090.23	6	$354,541	
	Heavy Duty Rubber Grade Crossing						
							$11,418,407
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform and Inspection Facility**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	10,800	$2,169,793	
	Pier Caps	SM	$175.00	$206.82	10,800	$2,233,611	
	Platform Slab	SM	$120.00	$141.82	10,800	$1,531,619	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	2,400	$709,083	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	10,800	$4,339,586	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	10,800	$2,042,158	
	Station Lighting	SM	$130.00	$153.63	10,800	$1,659,254	
	Signage	platform	$5,000.00	$5,909.02	3	$17,727	
	Platform Furnishing	platform	$45,000.00	$53,181.21	3	$159,544	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	12	$283,633	
	Inspection Platforms:						
	Under Car/Component Inspection Area	SM	$73.00	$86.27	10,800	$931,735	
	Lighting	SM	$90.00	$106.36	10,800	$1,148,714	
	Inspection Pit	M	$2,300.00	$2,718.15	2,400	$6,523,561	
	Inspection Pit Rail Support	M	$945.00	$1,116.81	2,400	$2,680,333	
	Vehicle Floor Level Inspection Platform- Str. Steel	SM	$405.00	$478.63	10,800	$5,169,213	
	Vehicle Floor Level Inspection Platform- Grating & Railing	SM	$270.00	$319.09	10,800	$3,446,142	
	Lighting	SM	$90.00	$106.36	10,800	$1,148,714	
	Vehicle Roof Level Inspection Platform- Str. Steel	SM	$485.00	$573.18	10,800	$6,190,293	
	Vehicle Roof Level Inspection Platform- Grating & Railing	SM	$270.00	$319.09	10,800	$3,446,142	
	Lighting Pole Mounted	SM	$110.00	$130.00	10,800	$1,403,984	
	Maint. Equipments & Tools	Platform	$100,000.00	$118,180.46	4	$472,722	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00	1	$7,942,000	
	Undercrossing	EA		$10,900,000.00		$0	
							$55,649,561
11	**Station Building & Access to Platforms**						
	Passenger Terminal (300'x200' Foot Print)	SM	$540.00	$638.17	11,000	$7,019,919	
	Ticketing (Enclosed)		$3,200.00	$3,781.77	100	$378,177	
							$7,398,097
	Sub-Total						**$457,570,000**
	Mobilization & Indirect Field Cost		15%				**$68,635,500**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$526,205,500**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$131,551,375
	Subtotal- Construction Cost (Not Escalated)						**$657,756,875**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$134,182,403
	Total Estimated Project Cost						**$791,939,278**

HIGH-SPEED TRAIN PASSANGER STATION BREAKDOWN

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Terminal Station
S2 - Transbay Transit Center Station (Caltrain 1-TB, Urban - Tunnel)

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	Inspection Platform Side-By-Side w/Passenger Platform						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	12.00	$109,199	
	Site Demolition	HECT	$800,000.00	$945,443.68	12.00	$11,345,324	
							$11,454,523
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	Cut & Cover Structure - Incl. Earthwork, Support System & Structure	HECT	$26,206,000.00	$30,970,371.38	12.00	$371,644,457	
							$371,644,457
6	**Track work**						
	Direct Fixation	M	$800.23	$945.72	2,560	$2,421,032	
	Turnouts, No. 26.5 W. Conc. Ties	EA	$365,000.00	$431,358.68	4	$1,725,435	
	Crossover, No. 26.5 w. Conc. Ties	EA	$750,000.00	$886,353.45	4	$3,545,414	
	Bumping Posts	EA	$50,000.00	$59,090.23	6	$354,541	
	Heavy Duty Rubber Grade Crossing						
							$8,046,422
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform and Inspection Facility**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	10,800	$2,169,793	
	Pier Caps	SM	$175.00	$206.82	10,800	$2,233,611	
	Platform Slab	SM	$120.00	$141.82	10,800	$1,531,619	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	2,400	$709,083	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	10,800	$4,339,586	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	10,800	$2,042,158	
	Station Lighting	SM	$130.00	$153.63	10,800	$1,659,254	
	Signage	platform	$5,000.00	$5,909.02	3	$17,727	
	Platform Furnishing	platform	$45,000.00	$53,181.21	3	$159,544	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	12	$283,633	
	Inspection Platforms:						
	Under Car/Component Inspection Area	SM	$73.00	$86.27	10,800	$931,735	
	Lighting	SM	$90.00	$106.36	10,800	$1,148,714	
	Inspection Pit	M	$2,300.00	$2,718.15	2,400	$6,523,561	
	Inspection Pit Rail Support	M	$945.00	$1,116.81	2,400	$2,680,333	
	Vehicle Floor Level Inspection Platform- Str. Steel	SM	$405.00	$478.63	10,800	$5,169,213	
	Vehicle Floor Level Inspection Platform- Grating & Railing	SM	$270.00	$319.09	10,800	$3,446,142	
	Lighting	SM	$90.00	$106.36	10,800	$1,148,714	
	Vehicle Roof Level Inspection Platform- Str. Steel	SM	$485.00	$573.18	10,800	$6,190,293	
	Vehicle Roof Level Inspection Platform- Grating & Railing	SM	$270.00	$319.09	10,800	$3,446,142	
	Lighting Pole Mounted	SM	$110.00	$130.00	10,800	$1,403,984	
	Maint. Equipments & Tools	Platform	$100,000.00	$118,180.46	4	$472,722	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00	1	$7,942,000	
	Undercrossing	EA		$10,900,000.00		$0	
							$55,649,561
11	**Station Building & Access to Platforms**						
	Passenger Terminal (Station Category I)	SM	$540.00	$638.17	11,154	$7,118,198	
	Ticketing (Enclosed)		$3,200.00	$3,781.77	100	$378,177	
							$7,496,376
	Sub-Total						**$454,290,000**
	Mobilization & Indirect Field Cost		15%				**$68,143,500**
	Subtotal- Construction Cost- Base (year 2003 dollars)						**$522,433,500**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$130,608,375
	Subtotal- Construction Cost (Not Escalated)						**$653,041,875**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$133,220,543
	Total Estimated Project Cost						**$786,262,418**

HIGH-SPEED TRAIN PASSANGER STATION BREAKDOWN

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Terminal Station
S3 - West Oakland/7th Street Station (Niles/I-880 1A, Urban -Tunnel)

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	Inspection Platform Behind Passenger Platform						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	9.00	$81,899	
	Site Demolition	HECT	$800,000.00	$945,443.68	9.00	$8,508,993	
							$8,590,892
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	Cut & Cover Structure - Incl. Earthwork, Support System & Structure	HECT	$26,206,000.00	$30,970,371.38	9.00	$278,733,342	
							$278,733,342
6	**Track work**						
	Direct Fixation	M	$800.23	$945.72	7,000	$6,620,008	
	Turnouts, No. 32.7 W. Conc. Ties	EA	$365,000.00	$431,358.68	2	$862,717	
	Crossover, No. 32.7 w. Conc. Ties	EA	$750,000.00	$886,353.45	2	$1,772,707	
	Bumping Posts	EA	$50,000.00	$59,090.23	4	$236,361	
	Heavy Duty Rubber Grade Crossing						
							$9,491,794
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform and Inspection Facility**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	7,200	$1,446,529	
	Pier Caps	SM	$175.00	$206.82	7,200	$1,489,074	
	Platform Slab	SM	$120.00	$141.82	7,200	$1,021,079	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	1,600	$472,722	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	7,200	$2,893,058	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	7,200	$1,361,439	
	Station Lighting	SM	$130.00	$153.63	7,200	$1,106,169	
	Signage	platform	$5,000.00	$5,909.02	2	$11,818	
	Platform Furnishing	platform	$45,000.00	$53,181.21	2	$106,362	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	8	$189,089	
	Inspection Platforms:						
	Under Car/Component Inspection Area	SM	$73.00	$86.27	11,400	$983,498	
	Lighting	SM	$90.00	$106.36	11,400	$1,212,532	
	Inspection Pit	M	$2,300.00	$2,718.15	1,600	$4,349,041	
	Inspection Pit Rail Support	M	$945.00	$1,116.81	1,600	$1,786,889	
	Vehicle Floor Level Inspection Platform- Str. Steel	SM	$405.00	$478.63	11,400	$5,456,392	
	Vehicle Floor Level Inspection Platform- Grating & Railing	SM	$270.00	$319.09	11,400	$3,637,595	
	Lighting	SM	$90.00	$106.36	11,400	$1,212,532	
	Vehicle Roof Level Inspection Platform- Str. Steel	SM	$485.00	$573.18	11,400	$6,534,198	
	Vehicle Roof Level Inspection Platform- Grating & Railing	SM	$270.00	$319.09	11,400	$3,637,595	
	Lighting Pole Mounted	SM	$110.00	$130.00	11,400	$1,481,983	
	Maint. Equipments & Tools	Platform	$100,000.00	$118,180.46	5	$590,902	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00	1	$7,942,000	
	Undercrossing	EA		$10,900,000.00		$0	
							$48,922,493
11	**Station Building & Access to Platforms**						
	Passenger Terminal (300'x200' Foot Print)	SM	$540.00	$638.17	11,000	$7,019,919	
	Ticketing (Enclosed)		$3,200.00	$3,781.77	100	$378,177	
							$7,398,097
	Sub-Total						**$353,140,000**
	Mobilization & Indirect Field Cost		15%				**$52,971,000**
	Subtotal- Construction Cost- Base (year 2003 dollars)						**$406,111,000**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$101,527,750
	Subtotal- Construction Cost (Not Escalated)						**$507,638,750**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$103,558,305
	Total Estimated Project Cost						**$611,197,055**

HIGH-SPEED TRAIN PASSANGER STATION BREAKDOWN

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Terminal Station
S4 - 12th Street/City Center Station (Niles/I-880 1B, Urban - Tunnel)

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	Inspection Platform Behind Passenger Platform						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	9.00	$81,899	
	Site Demolition	HECT	$800,000.00	$945,443.68	9.00	$8,508,993	
							$8,590,892
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	Cut & Cover Structure - Incl. Earthwork, Support System & Structure	HECT	$26,206,000.00	$30,970,371.38	9.00	$278,733,342	
							$278,733,342
6	**Track work**						
	Direct Fixation	M	$800.23	$945.72	7,000	$6,620,008	
	Turnouts, No. 32.7 W. Conc. Ties	EA	$365,000.00	$431,358.68	2	$862,717	
	Crossover, No. 32.7 w. Conc. Ties	EA	$750,000.00	$886,353.45	2	$1,772,707	
	Bumping Posts	EA	$50,000.00	$59,090.23	4	$236,361	
	Heavy Duty Rubber Grade Crossing						
							$9,491,794
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform and Inspection Facility**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	7,200	$1,446,529	
	Pier Caps	SM	$175.00	$206.82	7,200	$1,489,074	
	Platform Slab	SM	$120.00	$141.82	7,200	$1,021,079	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	1,600	$472,722	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	7,200	$2,893,058	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	7,200	$1,361,439	
	Station Lighting	SM	$130.00	$153.63	7,200	$1,106,169	
	Signage	platform	$5,000.00	$5,909.02	2	$11,818	
	Platform Furnishing	platform	$45,000.00	$53,181.21	2	$106,362	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	8	$189,089	
	Inspection Platforms:						
	Under Car/Component Inspection Area	SM	$73.00	$86.27	11,400	$983,498	
	Lighting	SM	$90.00	$106.36	11,400	$1,212,532	
	Inspection Pit	M	$2,300.00	$2,718.15	1,600	$4,349,041	
	Inspection Pit Rail Support	M	$945.00	$1,116.81	1,600	$1,786,889	
	Vehicle Floor Level Inspection Platform- Str. Steel	SM	$405.00	$478.63	11,400	$5,456,392	
	Vehicle Floor Level Inspection Platform- Grating & Railing	SM	$270.00	$319.09	11,400	$3,637,595	
	Lighting	SM	$90.00	$106.36	11,400	$1,212,532	
	Vehicle Roof Level Inspection Platform- Str. Steel	SM	$485.00	$573.18	11,400	$6,534,198	
	Vehicle Roof Level Inspection Platform- Grating & Railing	SM	$270.00	$319.09	11,400	$3,637,595	
	Lighting Pole Mounted	SM	$110.00	$130.00	11,400	$1,481,983	
	Maint. Equipments & Tools	Platform	$100,000.00	$118,180.46	5	$590,902	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00	1	$7,942,000	
	Undercrossing	EA		$10,900,000.00		$0	
							$48,922,493
11	**Station Building & Access to Platforms**						
	Passenger Terminal (300'x200' Foot Print)	SM	$540.00	$638.17	11,000	$7,019,919	
	Ticketing (Enclosed)		$3,200.00	$3,781.77	100	$378,177	
							$7,398,097
	Sub-Total						**$353,140,000**
	Mobilization & Indirect Field Cost		15%				**$52,971,000**
	Subtotal- Construction Cost- Base (year 2003 dollars)						**$406,111,000**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$101,527,750
	Subtotal- Construction Cost (Not Escalated)						**$507,638,750**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$103,558,305
	Total Estimated Project Cost						**$611,197,055**

HIGH-SPEED TRAIN PASSENGER STATION BREAKDOWN
Intermediate Stations

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S5 - San Jose Diridon Station (Caltrain 8-Pacheco 1, Urban - Aerial)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	-	$0	
	Site Demolition	HECT	$800,000.00	$945,443.68	-	$0	
							$0
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	Aerial Structure	HECT	$10,750,000.00	$12,704,399.46	5.00	$63,521,997	
							$63,521,997
6	**Track work**						
	Direct Fixation	M	$800.23	$945.72	3,760	$3,555,890	
	Turnouts, No. 26.5 W. Conc. Ties	EA	$365,000.00	$431,358.68	2	$862,717	
	Crossover, No. 26.5 w. Conc. Ties	EA	$750,000.00	$886,353.45	6	$5,318,121	
	Crossover, No. 20 w. Conc. Ties	EA	$400,000.00	$472,721.84	6	$2,836,331	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$12,573,059
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	10,800	$2,169,793	
	Pier Caps	SM	$175.00	$206.82	10,800	$2,233,611	
	Platform Slab	SM	$120.00	$141.82	10,800	$1,531,619	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	2,400	$709,083	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	10,800	$4,339,586	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	10,800	$2,042,158	
	Station Lighting	SM	$130.00	$153.63	10,800	$1,659,254	
	Signage	platform	$5,000.00	$5,909.02	3	$17,727	
	Platform Furnishing	platform	$45,000.00	$53,181.21	3	$159,544	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	12	$283,633	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00		$0	
	Undercrossing	EA		$10,900,000.00	1	$10,900,000	
							$26,046,008
11	**Station Building & Access to Platforms**						
	Passenger Terminal (250'x150' Foot Print)	SM	$540.00	$638.17	6,900	$4,403,404	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$4,781,581
	Sub-Total						**$106,920,000**
	Mobilization & Indirect Field Cost		15%				**$16,038,000**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$122,958,000**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$30,739,500
	Subtotal- Construction Cost (Not Escalated)						**$153,697,500**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$31,354,290
	Total Estimated Project Cost						**$185,051,790**

HIGH-SPEED TRAIN PASSENGER STATION BREAKDOWN
Intermediate Stations

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S6 - Millbrae/SFO Station (Caltrain 2-3, Urban - At Grade)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	-	$0	
	Site Demolition	HECT	$800,000.00	$945,443.68	-	$0	
							$0
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	at grade						
							$0
6	**Track work**						
	Ballasted Track Incl. Ballast and subballast	M	$430.00	$508.18		$0	
	Turnouts, No. 32.7 W. Conc. Ties	EA	$365,000.00	$431,358.68		$0	
	Crossover, No. 32.7 w. Conc. Ties	EA	$750,000.00	$886,353.45	4	$3,545,414	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$3,545,414
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	3,600	$723,264	
	Pier Caps	SM	$175.00	$206.82	3,600	$744,537	
	Platform Slab	SM	$120.00	$141.82	3,600	$510,540	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	400	$118,180	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	3,600	$1,446,529	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	3,600	$680,719	
	Station Lighting	SM	$130.00	$153.63	3,600	$553,085	
	Signage	platform	$5,000.00	$5,909.02	1	$5,909	
	Platform Furnishing	platform	$45,000.00	$53,181.21	1	$53,181	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	4	$94,544	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00	1	$7,942,000	
	Undercrossing	EA		$10,900,000.00		$0	
							$12,872,489
11	**Station Building & Access to Platforms**						
	Passenger Terminal (300'x200' Foot Print)	SM	$540.00	$638.17	-	$0	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$378,177
	Sub-Total						**$16,800,000**
	Mobilization & Indirect Field Cost		15%				**$2,520,000**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$19,320,000**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$4,830,000
	Subtotal- Construction Cost (Not Escalated)						**$24,150,000**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$4,926,600
	Total Estimated Project Cost						**$29,076,600**

HIGH-SPEED TRAIN PASSENGER STATION BREAKDOWN
Intermediate Stations

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S7 - Redwood City Station (Caltrain 3-4, Urban - At Grade)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	4.00	$36,400	
	Site Demolition	HECT	$800,000.00	$945,443.68	4.00	$3,781,775	
							$3,818,174
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	38,000.00	$336,814	
							$336,814
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	At Grade						
							$0
6	**Track work**						
	Ballasted Track Incl. Ballast and subballast	M	$430.00	$508.18		$0	
	Turnouts, No. 32.7 W. Conc. Ties	EA	$700,000.00	$827,263.22		$0	
	Crossover, No. 32.7 w. Conc. Ties	EA	$1,500,000.00	$1,772,706.90	4	$7,090,828	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$7,090,828
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	10,800	$2,169,793	
	Pier Caps	SM	$175.00	$206.82	10,800	$2,233,611	
	Platform Slab	SM	$120.00	$141.82	10,800	$1,531,619	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	2,400	$709,083	
	Platform Finish Work- excluded					$0	
	Canopy- Str. Steel	SM	$340.00	$401.81	10,800	$4,339,586	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	10,800	$2,042,158	
	Station Lighting	SM	$130.00	$153.63	10,800	$1,659,254	
	Signage	platform	$5,000.00	$5,909.02	3	$17,727	
	Platform Furnishing	platform	$45,000.00	$53,181.21	3	$159,544	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	12	$283,633	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00		$0	
	Undercrossing	EA		$10,900,000.00	1	$10,900,000	
							$26,046,008
11	**Station Building & Access to Platforms**						
	Passener Terminal (180'x65' Foot Print)	SM	$540.00	$638.17	2,100	$1,340,166	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$1,718,344
	Sub-Total						**$39,010,000**
	Mobilization & Indirect Field Cost		15%				**$5,851,500**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$44,861,500**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$11,215,375
	Subtotal- Construction Cost (Not Escalated)						**$56,076,875**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$11,439,683
	Total Estimated Project Cost						**$67,516,558**

HIGH-SPEED TRAIN PASSENGER STATION BREAKDOWN
Intermediate Stations

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S8 - Palo Alto (Caltrain 6-7, Urban - At Grade)*						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	4.00	$36,400	
	Site Demolition	HECT	$800,000.00	$945,443.68	4.00	$3,781,775	
							$3,818,174
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	38,000.00	$336,814	
							$336,814
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	At Grade						
							$0
6	**Track work**						
	Ballasted Track Incl. Ballast and subballast	M	$430.00	$508.18		$0	
	Turnouts, No. 32.7 W. Conc. Ties	EA	$700,000.00	$827,263.22		$0	
	Crossover, No. 32.7 w. Conc. Ties	EA	$1,500,000.00	$1,772,706.90	4	$7,090,828	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$7,090,828
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	10,800	$2,169,793	
	Pier Caps	SM	$175.00	$206.82	10,800	$2,233,611	
	Platform Slab	SM	$120.00	$141.82	10,800	$1,531,619	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	2,400	$709,083	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	10,800	$4,339,586	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	10,800	$2,042,158	
	Station Lighting	SM	$130.00	$153.63	10,800	$1,659,254	
	Signage	platform	$5,000.00	$5,909.02	3	$17,727	
	Platform Furnishing	platform	$45,000.00	$53,181.21	3	$159,544	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	12	$283,633	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00		$0	
	Undercrossing	EA		$10,900,000.00	1	$10,900,000	
							$26,046,008
11	**Station Building & Access to Platforms**						
	Passener Terminal (180'x65' Foot Print)	SM	$540.00	$638.17	2,100	$1,340,166	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$1,718,344
	Sub-Total						**$39,010,000**
	Mobilization & Indirect Field Cost		15%				**$5,851,500**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$44,861,500**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$11,215,375
	Subtotal- Construction Cost (Not Escalated)						**$56,076,875**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$11,439,683
	Total Estimated Project Cost						**$67,516,558**

HIGH-SPEED TRAIN PASSENGER STATION BREAKDOWN
Intermediate Stations

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S9 - Coliseum/Airport Station (Niles/I-880 2-3, Urban - At-Grade)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	4.00	$36,400	
	Site Demolition	HECT	$800,000.00	$945,443.68	4.00	$3,781,775	
							$3,818,174
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	105,000.00	$930,671	
							$930,671
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	At-grade						
							$0
6	**Track work**						
	Ballasted Track Incl. Ballast and subballast	M	$430.00	$508.18	7,000	$3,557,232	
	Turnouts, No. 40.5 W. Conc. Ties	EA	$400,000.00	$472,721.84	4	$1,890,887	
	Crossover, No. 40.5 w. Conc. Ties	EA	$800,000.00	$945,443.68	4	$3,781,775	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$9,229,894
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	7,200	$1,446,529	
	Pier Caps	SM	$175.00	$206.82	7,200	$1,489,074	
	Platform Slab	SM	$120.00	$141.82	7,200	$1,021,079	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	800	$236,361	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	7,200	$2,893,058	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	7,200	$1,361,439	
	Station Lighting	SM	$130.00	$153.63	7,200	$1,106,169	
	Signage	platform	$5,000.00	$5,909.02	2	$11,818	
	Platform Furnishing	platform	$45,000.00	$53,181.21	2	$106,362	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	8	$189,089	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00	1	$7,942,000	
	Undercrossing	EA		$10,900,000.00		$0	
							$17,802,978
11	**Station Building & Access to Platforms**						
	Passenger Terminal (200'x150' Foot Print)	SM	$540.00	$638.17	5,500	$3,509,960	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$3,888,137
	Sub-Total						**$35,670,000**
	Mobilization & Indirect Field Cost		15%				**$5,350,500**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$41,020,500**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$10,255,125
	Subtotal- Construction Cost (Not Escalated)						**$51,275,625**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$10,460,228
	Total Estimated Project Cost						**$61,735,853**

HIGH-SPEED TRAIN PASSENGER STATION BREAKDOWN
Intermediate Stations

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S10 - Union City (BART) Station (Niles/I-880 3-4, Urban - Aerial)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	4.00	$36,400	
	Site Demolition	HECT	$800,000.00	$945,443.68	4.00	$3,781,775	
							$3,818,174
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	73,000.00	$647,038	
							$647,038
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	at grade						
							$0
6	**Track work**						
	Ballasted Track Incl. Ballast and subballast	M	$430.00	$508.18	4,860	$2,469,735	
	Turnouts, No. 32.7 W. Conc. Ties	EA	$365,000.00	$431,358.68	4	$1,725,435	
	Crossover, No. 32.7 w. Conc. Ties	EA	$750,000.00	$886,353.45	4	$3,545,414	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$7,740,584
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	7,200	$1,446,529	
	Pier Caps	SM	$175.00	$206.82	7,200	$1,489,074	
	Platform Slab	SM	$120.00	$141.82	7,200	$1,021,079	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	800	$236,361	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	7,200	$2,893,058	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	7,200	$1,361,439	
	Station Lighting	SM	$130.00	$153.63	7,200	$1,106,169	
	Signage	platform	$5,000.00	$5,909.02	2	$11,818	
	Platform Furnishing	platform	$45,000.00	$53,181.21	2	$106,362	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	8	$189,089	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00		$0	
	Undercrossing	EA		$10,900,000.00	1	$10,900,000	
							$20,760,978
11	**Station Building & Access to Platforms**						
	Passenger Terminal (300'x200' Foot Print)	SM	$540.00	$638.17	11,000	$7,019,919	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$7,398,097
	Sub-Total						**$40,360,000**
	Mobilization & Indirect Field Cost		15%				**$6,054,000**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$46,414,000**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$11,603,500
	Subtotal- Construction Cost (Not Escalated)						**$58,017,500**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$11,835,570
	Total Estimated Project Cost						**$69,853,070**

HIGH-SPEED TRAIN PASSENGER STATION BREAKDOWN
Intermediate Stations

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S11 - Union City (Shinn) Station (Niles/I-880 4-5, Urban - Aerial)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	2.00	$18,200	
	Site Demolition	HECT	$800,000.00	$945,443.68	2.00	$1,890,887	
							$1,909,087
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	Aerial Structure	HECT	$10,750,000.00	$12,704,399.46	11.00	$139,748,394	
							$139,748,394
6	**Track work**						
	Direct Fixation	M	$430.00	$508.18	4,860	$2,469,735	
	Turnouts, No. 32.7 W. Conc. Ties	EA	$700,000.00	$827,263.22	4	$3,309,053	
	Crossover, No. 32.7 w. Conc. Ties	EA	$1,500,000.00	$1,772,706.90	4	$7,090,828	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$12,869,616
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	$170.00	$200.91	7,200	$1,446,529	
	Pier Caps	SM	$175.00	$206.82	7,200	$1,489,074	
	Platform Slab	SM	$120.00	$141.82	7,200	$1,021,079	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	800	$236,361	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	7,200	$2,893,058	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	7,200	$1,361,439	
	Station Lighting	SM	$130.00	$153.63	7,200	$1,106,169	
	Signage	platform	$5,000.00	$5,909.02	2	$11,818	
	Platform Furnishing	platform	$45,000.00	$53,181.21	2	$106,362	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	8	$189,089	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00		$0	
	Undercrossing	EA		$10,900,000.00	1	$10,900,000	
							$20,760,978
11	**Station Building & Access to Platforms**						
	Passenger Terminal (Station Category III)	SM	$540.00	$638.17	5,539	$3,534,848	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$3,913,026
	Sub-Total						**$179,200,000**
	Mobilization & Indirect Field Cost		15%				**$26,880,000**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$206,080,000**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$51,520,000
	Subtotal- Construction Cost (Not Escalated)						**$257,600,000**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$52,550,400
	Total Estimated Project Cost						**$310,150,400**

HIGH-SPEED TRAIN PASSENGER STATION BREAKDOWN
Intermediate Stations

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S12 - Fremont (Warm Springs) Station (Niles/I-880 5-6, Suburban - Aerial)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	-	$0	
	Site Demolition	HECT	$800,000.00	$945,443.68	-	$0	
							$0
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	Aerial Structure	HECT	$10,750,000.00	$12,704,399.46	4.00	$50,817,598	
							$50,817,598
6	**Track work**						
	Direct Fixation	M	$800.23	$945.72	4,860	$4,596,177	
	Turnouts, No. 32.7 W. Conc. Ties	EA	$365,000.00	$431,358.68	4	$1,725,435	
	Crossover, No. 32.7 w. Conc. Ties	EA	$750,000.00	$886,353.45	4	$3,545,414	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$9,867,026
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	10,800	$2,169,793	
	Pier Caps	SM	$175.00	$206.82	10,800	$2,233,611	
	Platform Slab	SM	$120.00	$141.82	10,800	$1,531,619	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	2,400	$709,083	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	10,800	$4,339,586	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	10,800	$2,042,158	
	Station Lighting	SM	$130.00	$153.63	10,800	$1,659,254	
	Signage	platform	$5,000.00	$5,909.02	3	$17,727	
	Platform Furnishing	platform	$45,000.00	$53,181.21	3	$159,544	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	12	$283,633	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00		$0	
	Undercrossing	EA		$10,900,000.00	1	$10,900,000	
							$26,046,008
11	**Station Building & Access to Platforms**						
	Passenger Terminal (Station Category III)	SM	$540.00	$638.17	5,539	$3,534,848	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$3,913,026
	Sub-Total						**$90,640,000**
	Mobilization & Indirect Field Cost		15%				**$13,596,000**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$104,236,000**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$26,059,000
	Subtotal- Construction Cost (Not Escalated)						**$130,295,000**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$26,580,180
	Total Estimated Project Cost						**$156,875,180**

HIGH-SPEED TRAIN PASSENGER STATION BREAKDOWN
Intermediate Stations

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S13 - Newark Station (Caltrain 2-3, Suburban - Aerial)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	2.00	$18,200	
	Site Demolition	HECT	$800,000.00	$945,443.68	2.00	$1,890,887	
							$1,909,087
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	Aerial Structure	HECT	$10,750,000.00	$12,704,399.46	11.00	$139,748,394	
							$139,748,394
6	**Track work**						
	Direct Fixation	M	$430.00	$508.18	4,860	$2,469,735	
	Turnouts, No. 32.7 W. Conc. Ties	EA	$700,000.00	$827,263.22	4	$3,309,053	
	Crossover, No. 32.7 w. Conc. Ties	EA	$1,500,000.00	$1,772,706.90	4	$7,090,828	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$12,869,616
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	7,200	$1,446,529	
	Pier Caps	SM	$175.00	$206.82	7,200	$1,489,074	
	Platform Slab	SM	$120.00	$141.82	7,200	$1,021,079	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	800	$236,361	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	7,200	$2,893,058	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	7,200	$1,361,439	
	Station Lighting	SM	$130.00	$153.63	7,200	$1,106,169	
	Signage	platform	$5,000.00	$5,909.02	2	$11,818	
	Platform Furnishing	platform	$45,000.00	$53,181.21	2	$106,362	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	8	$189,089	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00		$0	
	Undercrossing	EA		$10,900,000.00	1	$10,900,000	
							$20,760,978
11	**Station Building & Access to Platforms**						
	Passenger Terminal (Station Category III)	SM	$540.00	$638.17	5,539	$3,534,848	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$3,913,026
	Sub-Total						**$179,200,000**
	Mobilization & Indirect Field Cost		15%				**$26,880,000**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$206,080,000**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$51,520,000
	Subtotal- Construction Cost (Not Escalated)						**$257,600,000**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$52,550,400
	Total Estimated Project Cost						**$310,150,400**

HIGH-SPEED TRAIN PASSENGER STATION BREAKDOWN
Intermediate Stations

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S14 - Pleasanton (BART) Station (I-680/580/UPRR 1-2, Suburban - Aerial)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	4.00	$36,400	
	Site Demolition	HECT	$800,000.00	$945,443.68	4.00	$3,781,775	
							$3,818,174
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	Aerial Structure	HECT	$10,750,000.00	$12,704,399.46	11.00	$139,748,394	
							$139,748,394
6	**Track work**						
	Direct Fixation	M	$800.23	$945.72	10,000	$9,457,155	
	Turnouts, No. 50 W. Conc. Ties	EA	$365,000.00	$431,358.68	4	$1,725,435	
	Crossover, No. 50 w. Conc. Ties	EA	$750,000.00	$886,353.45	4	$3,545,414	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$14,728,003
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	7,200	$1,446,529	
	Pier Caps	SM	$175.00	$206.82	7,200	$1,489,074	
	Platform Slab	SM	$120.00	$141.82	7,200	$1,021,079	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	800	$236,361	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	7,200	$2,893,058	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	7,200	$1,361,439	
	Station Lighting	SM	$130.00	$153.63	7,200	$1,106,169	
	Signage	platform	$5,000.00	$5,909.02	2	$11,818	
	Platform Furnishing	platform	$45,000.00	$53,181.21	2	$106,362	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	8	$189,089	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00		$0	
	Undercrossing	EA		$10,900,000.00	1	$10,900,000	
							$20,760,978
11	**Station Building & Access to Platforms**						
	Passenger Terminal (Station Category III)	SM	$540.00	$638.17	5,539	$3,534,848	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$3,913,026
	Sub-Total						**$182,970,000**
	Mobilization & Indirect Field Cost		15%				**$27,445,500**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$210,415,500**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$52,603,875
	Subtotal- Construction Cost (Not Escalated)						**$263,019,375**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$53,655,953
	Total Estimated Project Cost						**$316,675,328**

HIGH-SPEED TRAIN PASSENGER STATION BREAKDOWN
Intermediate Stations

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S15 - Pleasanton (I-680/Bernal) Station (UPRR 3-4, Suburban - At Grade)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	4.00	$36,400	
	Site Demolition	HECT	$800,000.00	$945,443.68	4.00	$3,781,775	
							$3,818,174
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	150,000.00	$1,329,530	
							$1,329,530
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	At grade					$0	
							$0
6	**Track work**						
	Ballasted Track Incl. Ballast and subballast	M	$430.00	$508.18	10,000	$5,081,760	
	Turnouts, No. 50 W. Conc. Ties	EA	$700,000.00	$827,263.22	4	$3,309,053	
	Crossover, No. 50 w. Conc. Ties	EA	$1,500,000.00	$1,772,706.90	4	$7,090,828	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$15,481,640
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	7,200	$1,446,529	
	Pier Caps	SM	$175.00	$206.82	7,200	$1,489,074	
	Platform Slab	SM	$120.00	$141.82	7,200	$1,021,079	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	800	$236,361	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	7,200	$2,893,058	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	7,200	$1,361,439	
	Station Lighting	SM	$130.00	$153.63	7,200	$1,106,169	
	Signage	platform	$5,000.00	$5,909.02	2	$11,818	
	Platform Furnishing	platform	$45,000.00	$53,181.21	2	$106,362	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	8	$189,089	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00	1	$7,942,000	
	Undercrossing	EA		$10,900,000.00		$0	
							$17,802,978
11	**Station Building & Access to Platforms**						
	Passenger Terminal (Station Category III)	SM	$540.00	$638.17	5,539	$3,534,848	
	Ticketing (Enclosed)	SM	$3,200.00	$1.18	100	$118	
							$3,534,967
	Sub-Total						**$41,970,000**
	Mobilization & Indirect Field Cost		15%				**$6,295,500**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$48,265,500**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$12,066,375
	Subtotal- Construction Cost (Not Escalated)						**$60,331,875**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$12,307,703
	Total Estimated Project Cost						**$72,639,578**

HIGH-SPEED TRAIN PASSENGER STATION BREAKDOWN
Intermediate Stations

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S16 - Livermore 1 (I-580) Station (I-680/580/UPRR 3-4, Undeveloped - Aerial)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	-	$0	
	Site Demolition	HECT	$800,000.00	$945,443.68	-	$0	
							$0
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	Aerial Structure	HECT	$10,750,000.00	$12,704,399.46	4.00	$43,000,000	
							$43,000,000
6	**Track work**						
	Direct Fixation	M	$800.23	$945.72	10,000	$9,457,155	
	Turnouts, No. 50 W. Conc. Ties	EA	$365,000.00	$431,358.68	4	$1,725,435	
	Crossover, No. 50 w. Conc. Ties	EA	$750,000.00	$886,353.45	4	$3,545,414	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$14,728,003
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	10,800	$2,169,793	
	Pier Caps	SM	$175.00	$206.82	10,800	$2,233,611	
	Platform Slab	SM	$120.00	$141.82	10,800	$1,531,619	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	2,400	$709,083	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	10,800	$4,339,586	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	10,800	$2,042,158	
	Station Lighting	SM	$130.00	$153.63	10,800	$1,659,254	
	Signage	platform	$5,000.00	$5,909.02	3	$17,727	
	Platform Furnishing	platform	$45,000.00	$53,181.21	3	$159,544	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	12	$283,633	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00		$0	
	Undercrossing	EA		$10,900,000.00	1	$10,900,000	
							$26,046,008
11	**Station Building & Access to Platforms**						
	Passenger Terminal (Station Category III)	SM	$540.00	$638.17	5,539	$3,534,848	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$3,913,026
	Sub-Total						**$87,690,000**
	Mobilization & Indirect Field Cost		15%				**$13,153,500**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$100,843,500**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$25,210,875
	Subtotal- Construction Cost (Not Escalated)						**$126,054,375**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$25,715,093
	Total Estimated Project Cost						**$151,769,468**

HIGH-SPEED TRAIN PASSENGER STATION BREAKDOWN
Intermediate Stations

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S17 - Livermore 2 (Downtown) Station (UPRR 5-6, Urban - At Grade)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	4.00	$36,400	
	Site Demolition	HECT	$800,000.00	$945,443.68	4.00	$3,781,775	
							$3,818,174
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	150,000.00	$1,329,530	
							$1,329,530
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	At grade						
							$0
6	**Track work**						
	Ballasted Track Incl. Ballast and subballast	M	$430.00	$508.18	10,000	$5,081,760	
	Turnouts, No. 50 W. Conc. Ties	EA	$700,000.00	$827,263.22	4	$3,309,053	
	Crossover, No. 50 w. Conc. Ties	EA	$1,500,000.00	$1,772,706.90	4	$7,090,828	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$15,481,640
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	7,200	$1,446,529	
	Pier Caps	SM	$175.00	$206.82	7,200	$1,489,074	
	Platform Slab	SM	$120.00	$141.82	7,200	$1,021,079	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	800	$236,361	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	7,200	$2,893,058	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	7,200	$1,361,439	
	Station Lighting	SM	$130.00	$153.63	7,200	$1,106,169	
	Signage	platform	$5,000.00	$5,909.02	2	$11,818	
	Platform Furnishing	platform	$45,000.00	$53,181.21	2	$106,362	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	8	$189,089	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00	1	$7,942,000	
	Undercrossing	EA		$10,900,000.00		$0	
							$17,802,978
11	**Station Building & Access to Platforms**						
	Passenger Terminal (Station Category III)	SM	$540.00	$638.17	5,539	$3,534,848	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$3,913,026
	Sub-Total						**$42,350,000**
	Mobilization & Indirect Field Cost		15%				**$6,352,500**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$48,702,500**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$12,175,625
	Subtotal- Construction Cost (Not Escalated)						**$60,878,125**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$12,419,138
	Total Estimated Project Cost						**$73,297,263**

HIGH-SPEED TRAIN PASSENGER STATION BREAKDOWN
Intermediate Stations

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S18 - Livermore 2 (Downtown) Station (UPRR 5-6, Urban - Aerial)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	2.00	$18,200	
	Site Demolition	HECT	$800,000.00	$945,443.68	2.00	$1,890,887	
							$1,909,087
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	Aerial Structure	HECT	$10,750,000.00	$12,704,399.46	11.00	$139,748,394	
							$139,748,394
6	**Track work**						
	Direct Fixation	M	$430.00	$508.18	10,000	$5,081,760	
	Turnouts, No. 50 W. Conc. Ties	EA	$700,000.00	$827,263.22	4	$3,309,053	
	Crossover, No. 50 w. Conc. Ties	EA	$1,500,000.00	$1,772,706.90	4	$7,090,828	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$15,481,640
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	7,200	$1,446,529	
	Pier Caps	SM	$175.00	$206.82	7,200	$1,489,074	
	Platform Slab	SM	$120.00	$141.82	7,200	$1,021,079	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	800	$236,361	
	Platform Finish Work- excluded					$0	
	Canopy- Str. Steel	SM	$340.00	$401.81	7,200	$2,893,058	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	7,200	$1,361,439	
	Station Lighting	SM	$130.00	$153.63	7,200	$1,106,169	
	Signage	platform	$5,000.00	$5,909.02	2	$11,818	
	Platform Furnishing	platform	$45,000.00	$53,181.21	2	$106,362	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	8	$189,089	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00		$0	
	Undercrossing	EA		$10,900,000.00	1	$10,900,000	
							$20,760,978
11	**Station Building & Access to Platforms**						
	Passenger Terminal (Station Category III)	SM	$540.00	$638.17	5,539	$3,534,848	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$3,913,026
	Sub-Total						**$181,810,000**
	Mobilization & Indirect Field Cost		15%				**$27,271,500**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$209,081,500**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$52,270,375
	Subtotal- Construction Cost (Not Escalated)						**$261,351,875**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$53,315,783
	Total Estimated Project Cost						**$314,667,658**

HIGH-SPEED TRAIN PASSENGER STATION BREAKDOWN
Intermediate Stations

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S19 - Livermore (Greenville Road/I-580) Station (I-680/580/UPRR 4-5, Undeveloped - Aerial)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	-	$0	
	Site Demolition	HECT	$800,000.00	$945,443.68	-	$0	
							$0
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	Aerial Structure	HECT	$10,750,000.00	$12,704,399.46	4.00	$50,817,598	
							$50,817,598
6	**Track work**						
	Direct Fixation	M	$800.23	$945.72	10,000	$9,457,155	
	Turnouts, No. 50 W. Conc. Ties	EA	$365,000.00	$431,358.68	4	$1,725,435	
	Crossover, No. 50 w. Conc. Ties	EA	$750,000.00	$886,353.45	4	$3,545,414	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$14,728,003
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	10,800	$2,169,793	
	Pier Caps	SM	$175.00	$206.82	10,800	$2,233,611	
	Platform Slab	SM	$120.00	$141.82	10,800	$1,531,619	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	2,400	$709,083	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	10,800	$4,339,586	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	10,800	$2,042,158	
	Station Lighting	SM	$130.00	$153.63	10,800	$1,659,254	
	Signage	platform	$5,000.00	$5,909.02	3	$17,727	
	Platform Furnishing	platform	$45,000.00	$53,181.21	3	$159,544	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	12	$283,633	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00	1	$7,942,000	
	Undercrossing	EA		$10,900,000.00		$0	
							$23,088,008
11	**Station Building & Access to Platforms**						
	Passenger Terminal (Station Category III)	SM	$540.00	$638.17	5,539	$3,534,848	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$3,913,026
	Sub-Total						**$92,550,000**
	Mobilization & Indirect Field Cost		15%				**$13,882,500**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$106,432,500**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$26,608,125
	Subtotal- Construction Cost (Not Escalated)						**$133,040,625**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$27,140,288
	Total Estimated Project Cost						**$160,180,913**

HIGH-SPEED TRAIN PASSENGER STATION BREAKDOWN
Intermediate Stations

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S20 - Livermore (Greenville Road/UPRR) Station						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	4.00	$36,400	
	Site Demolition	HECT	$800,000.00	$945,443.68	4.00	$3,781,775	
							$3,818,174
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	150,000.00	$1,329,530	
							$1,329,530
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	At grade					$0	
							$0
6	**Track work**						
	Ballasted Track Incl. Ballast and subballast	M	$430.00	$508.18	10,000	$5,081,760	
	Turnouts, No. 50 W. Conc. Ties	EA	$700,000.00	$827,263.22	4	$3,309,053	
	Crossover, No. 50 w. Conc. Ties	EA	$1,500,000.00	$1,772,706.90	4	$7,090,828	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$15,481,640
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	7,200	$1,446,529	
	Pier Caps	SM	$175.00	$206.82	7,200	$1,489,074	
	Platform Slab	SM	$120.00	$141.82	7,200	$1,021,079	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	800	$236,361	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	7,200	$2,893,058	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	7,200	$1,361,439	
	Station Lighting	SM	$130.00	$153.63	7,200	$1,106,169	
	Signage	platform	$5,000.00	$5,909.02	2	$11,818	
	Platform Furnishing	platform	$45,000.00	$53,181.21	2	$106,362	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	8	$189,089	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00	1	$7,942,000	
	Undercrossing	EA		$10,900,000.00		$0	
							$17,802,978
11	**Station Building & Access to Platforms**						
	Passenger Terminal (Station Category III)	SM	$540.00	$638.17	5,539	$3,534,848	
	Ticketing (Enclosed)	SM	$3,200.00	$1.18	100	$118	
							$3,534,967
	Sub-Total						**$41,970,000**
	Mobilization & Indirect Field Cost		15%				**$6,295,500**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$48,265,500**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$12,066,375
	Subtotal- Construction Cost (Not Escalated)						**$60,331,875**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$12,307,703
	Total Estimated Project Cost						**$72,639,578**

HIGH-SPEED TRAIN PASSENGER STATION BREAKDOWN
Intermediate Stations

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S21 - Tracy 1 (Downtown) Station (UPRR 10-11, Urban - Aerial)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	2.00	$18,200	
	Site Demolition	HECT	$800,000.00	$945,443.68	2.00	$1,890,887	
							$1,909,087
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	Aerial Structure	HECT	$10,750,000.00	$12,704,399.46	11.00	$139,748,394	
							$139,748,394
6	**Track work**						
	Direct Fixation	M	$430.00	$508.18	4,860	$2,469,735	
	Turnouts, No. 32.7 W. Conc. Ties	EA	$700,000.00	$827,263.22	4	$3,309,053	
	Crossover, No. 32.7 w. Conc. Ties	EA	$1,500,000.00	$1,772,706.90	4	$7,090,828	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$12,869,616
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	$170.00	$200.91	7,200	$1,446,529	
	Pier Caps	SM	$175.00	$206.82	7,200	$1,489,074	
	Platform Slab	SM	$120.00	$141.82	7,200	$1,021,079	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	800	$236,361	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	7,200	$2,893,058	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	7,200	$1,361,439	
	Station Lighting	SM	$130.00	$153.63	7,200	$1,106,169	
	Signage	platform	$5,000.00	$5,909.02	2	$11,818	
	Platform Furnishing	platform	$45,000.00	$53,181.21	2	$106,362	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	8	$189,089	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00		$0	
	Undercrossing	EA		$10,900,000.00	1	$10,900,000	
							$20,760,978
11	**Station Building & Access to Platforms**						
	Passenger Terminal (Station Category III)	SM	$540.00	$638.17	5,539	$3,534,848	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$3,913,026
	Sub-Total						**$179,200,000**
	Mobilization & Indirect Field Cost		15%				**$26,880,000**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$206,080,000**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$51,520,000
	Subtotal- Construction Cost (Not Escalated)						**$257,600,000**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$52,550,400
	Total Estimated Project Cost						**$310,150,400**

HIGH-SPEED TRAIN PASSENGER STATION BREAKDOWN
Intermediate Stations

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S22 - Tracy 2 (Existing ACE) Station (SUPRR 2-3, Suburban - Aerial)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	2.00	$18,200	
	Site Demolition	HECT	$800,000.00	$945,443.68	2.00	$1,890,887	
							$1,909,087
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	Aerial Structure	HECT	$10,750,000.00	$12,704,399.46	11.00	$139,748,394	
							$139,748,394
6	**Track work**						
	Direct Fixation	M	$430.00	$508.18	10,000	$5,081,760	
	Turnouts, No. 50 W. Conc. Ties	EA	$700,000.00	$827,263.22	4	$3,309,053	
	Crossover, No. 50 w. Conc. Ties	EA	$1,500,000.00	$1,772,706.90	4	$7,090,828	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$15,481,640
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	7,200	$1,446,529	
	Pier Caps	SM	$175.00	$206.82	7,200	$1,489,074	
	Platform Slab	SM	$120.00	$141.82	7,200	$1,021,079	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	800	$236,361	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	7,200	$2,893,058	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	7,200	$1,361,439	
	Station Lighting	SM	$130.00	$153.63	7,200	$1,106,169	
	Signage	platform	$5,000.00	$5,909.02	2	$11,818	
	Platform Furnishing	platform	$45,000.00	$53,181.21	2	$106,362	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	8	$189,089	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00		$0	
	Undercrossing	EA		$10,900,000.00	1	$10,900,000	
							$20,760,978
11	**Station Building & Access to Platforms**						
	Passenger Terminal (Station Category III)	SM	$540.00	$638.17	5,539	$3,534,848	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$3,913,026
	Sub-Total						**$181,810,000**
	Mobilization & Indirect Field Cost		15%				**$27,271,500**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$209,081,500**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$52,270,375
	Subtotal- Construction Cost (Not Escalated)						**$261,351,875**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$53,315,783
	Total Estimated Project Cost						**$314,667,658**

HIGH-SPEED TRAIN PASSENGER STATION BREAKDOWN
Intermediate Stations

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S23 - Gilroy (Caltrain) Station (Pacheco 2-3, Urban - Aerial)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	-	$0	
	Site Demolition	HECT	$800,000.00	$945,443.68	-	$0	
							$0
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	Aerial Structure	HECT	$10,750,000.00	$12,704,399.46	4.00	$50,817,598	
							$50,817,598
6	**Track work**						
	Direct Fixation	M	$800.23	$945.72	3,760	$3,555,890	
	Turnouts, No. 26.5 W. Conc. Ties	EA	$365,000.00	$431,358.68	4	$1,725,435	
	Crossover, No. 26.5 w. Conc. Ties	EA	$750,000.00	$886,353.45	4	$3,545,414	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$8,826,739
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	10,800	$2,169,793	
	Pier Caps	SM	$175.00	$206.82	10,800	$2,233,611	
	Platform Slab	SM	$120.00	$141.82	10,800	$1,531,619	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	2,400	$709,083	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	10,800	$4,339,586	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	10,800	$2,042,158	
	Station Lighting	SM	$130.00	$153.63	10,800	$1,659,254	
	Signage	platform	$5,000.00	$5,909.02	3	$17,727	
	Platform Furnishing	platform	$45,000.00	$53,181.21	3	$159,544	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	12	$283,633	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00	1	$7,942,000	
	Undercrossing	EA		$10,900,000.00		$0	
							$23,088,008
11	**Station Building & Access to Platforms**						
	Passenger Terminal (185'x120' Foot Print)	SM	$540.00	$638.17	4,000	$2,552,698	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$2,930,875
	Sub-Total						**$85,660,000**
	Mobilization & Indirect Field Cost		15%				**$12,849,000**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$98,509,000**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$24,627,250
	Subtotal- Construction Cost (Not Escalated)						**$123,136,250**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$25,119,795
	Total Estimated Project Cost						**$148,256,045**

HIGH-SPEED TRAIN PASSENGER STATION BREAKDOWN
Intermediate Stations

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S24 - Morgan Hill (Caltrain) Station (Pacheco 1-2, Suburban - Aerial)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	4.00	$36,400	
	Site Demolition	HECT	$800,000.00	$945,443.68	4.00	$3,781,775	
							$3,818,174
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	Aerial Structure	HECT	$10,750,000.00	$12,704,399.46	9.90	$125,773,555	
							$125,773,555
6	**Track work**						
	Direct Fixation	M	$800.23	$945.72	4,860	$4,596,177	
	Turnouts, No. 32.7 W. Conc. Ties	EA	$365,000.00	$431,358.68	4	$1,725,435	
	Crossover, No. 32.7 w. Conc. Ties	EA	$750,000.00	$886,353.45	4	$3,545,414	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$9,867,026
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	7,200	$1,446,529	
	Pier Caps	SM	$175.00	$206.82	7,200	$1,489,074	
	Platform Slab	SM	$120.00	$141.82	7,200	$1,021,079	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	800	$236,361	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	7,200	$2,893,058	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	7,200	$1,361,439	
	Station Lighting	SM	$130.00	$153.63	7,200	$1,106,169	
	Signage	platform	$5,000.00	$5,909.02	2	$11,818	
	Platform Furnishing	platform	$45,000.00	$53,181.21	2	$106,362	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	8	$189,089	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00	1	$7,942,000	
	Undercrossing	EA		$10,900,000.00		$0	
							$17,802,978
11	**Station Building & Access to Platforms**						
	Passenger Terminal (300'x200' Foot Print)	SM	$540.00	$638.17	11,000	$7,019,919	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$7,398,097
	Sub-Total						**$164,660,000**
	Mobilization & Indirect Field Cost		15%				**$24,699,000**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$189,359,000**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$47,339,750
	Subtotal- Construction Cost (Not Escalated)						**$236,698,750**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$48,286,545
	Total Estimated Project Cost						**$284,985,295**

HIGH-SPEED TRAIN PASSENGER STATION BREAKDOWN
Intermediate Stations

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S25 - Modesto Downtown Station (UPRR N/S 4-5A/B, Urban - At Grade)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	4.00	$36,400	
	Site Demolition	HECT	$800,000.00	$945,443.68	4.00	$3,781,775	
							$3,818,174
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	38,000.00	$336,814	
							$336,814
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	At Grade					$0	
							$0
6	**Track work**						
	Ballasted Track Incl. Ballast and subballast	M	$430.00	$508.18	3,760	$1,910,742	
	Turnouts, No. 50 W. Conc. Ties	EA	$700,000.00	$827,263.22	4	$3,309,053	
	Crossover, No. 50 w. Conc. Ties	EA	$1,500,000.00	$1,772,706.90	4	$7,090,828	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$12,310,622
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	10,800	$2,169,793	
	Pier Caps	SM	$175.00	$206.82	10,800	$2,233,611	
	Platform Slab	SM	$120.00	$141.82	10,800	$1,531,619	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	2,400	$709,083	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	10,800	$4,339,586	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	10,800	$2,042,158	
	Station Lighting	SM	$130.00	$153.63	10,800	$1,659,254	
	Signage	platform	$5,000.00	$5,909.02	3	$17,727	
	Platform Furnishing	platform	$45,000.00	$53,181.21	3	$159,544	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	12	$283,633	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00	1	$7,942,000	
	Undercrossing	EA		$10,900,000.00		$0	
							$23,088,008
11	**Station Building & Access to Platforms**						
	Passener Terminal (180'x65' Foot Print)	SM	$540.00	$638.17	2,100	$1,340,166	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$1,718,344
	Sub-Total						**$41,270,000**
	Mobilization & Indirect Field Cost		15%				**$6,190,500**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$47,460,500**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$11,865,125
	Subtotal- Construction Cost (Not Escalated)						**$59,325,625**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$12,102,428
	Total Estimated Project Cost						**$71,428,053**

HIGH-SPEED TRAIN PASSENGER STATION BREAKDOWN
Intermediate Stations

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S26 - Briggsmore (Amtrak) Station (BNSF N/S 4-5, Suburban - At Grade)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	4.00	$36,400	
	Site Demolition	HECT	$800,000.00	$945,443.68	4.00	$3,781,775	
							$3,818,174
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	38,000.00	$336,814	
							$336,814
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	At Grade					$0	
							$0
6	**Track work**						
	Ballasted Track Incl. Ballast and subballast	M	$430.00	$508.18	3,760	$1,910,742	
	Turnouts, No. 50 W. Conc. Ties	EA	$700,000.00	$827,263.22	4	$3,309,053	
	Crossover, No. 50 w. Conc. Ties	EA	$1,500,000.00	$1,772,706.90	4	$7,090,828	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$12,310,622
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	10,800	$2,169,793	
	Pier Caps	SM	$175.00	$206.82	10,800	$2,233,611	
	Platform Slab	SM	$120.00	$141.82	10,800	$1,531,619	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	2,400	$709,083	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	10,800	$4,339,586	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	10,800	$2,042,158	
	Station Lighting	SM	$130.00	$153.63	10,800	$1,659,254	
	Signage	platform	$5,000.00	$5,909.02	3	$17,727	
	Platform Furnishing	platform	$45,000.00	$53,181.21	3	$159,544	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	12	$283,633	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00	1	$7,942,000	
	Undercrossing	EA		$10,900,000.00		$0	
							$23,088,008
11	**Station Building & Access to Platforms**						
	Passener Terminal (180'x65' Foot Print)	SM	$540.00	$638.17	2,100	$1,340,166	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$1,718,344
	Sub-Total						**$41,270,000**
	Mobilization & Indirect Field Cost		15%				**$6,190,500**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$47,460,500**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$11,865,125
	Subtotal- Construction Cost (Not Escalated)						**$59,325,625**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$12,102,428
	Total Estimated Project Cost						**$71,428,053**

HIGH-SPEED TRAIN PASSENGER STATION BREAKDOWN
Intermediate Stations

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S27 - Merced Downtown Station (UPRR N/S 7-8, BNSF N/S 7-8, Urban - At Grade)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	4.00	$36,400	
	Site Demolition	HECT	$800,000.00	$945,443.68	4.00	$3,781,775	
							$3,818,174
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	38,000.00	$336,814	
							$336,814
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	At Grade					$0	
							$0
6	**Track work**						
	Ballasted Track Incl. Ballast and subballast	M	$430.00	$508.18	3,760	$1,910,742	
	Turnouts, No. 50 W. Conc. Ties	EA	$700,000.00	$827,263.22	4	$3,309,053	
	Crossover, No. 50 w. Conc. Ties	EA	$1,500,000.00	$1,772,706.90	4	$7,090,828	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$12,310,622
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	10,800	$2,169,793	
	Pier Caps	SM	$175.00	$206.82	10,800	$2,233,611	
	Platform Slab	SM	$120.00	$141.82	10,800	$1,531,619	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	2,400	$709,083	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	10,800	$4,339,586	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	10,800	$2,042,158	
	Station Lighting	SM	$130.00	$153.63	10,800	$1,659,254	
	Signage	platform	$5,000.00	$5,909.02	3	$17,727	
	Platform Furnishing	platform	$45,000.00	$53,181.21	3	$159,544	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	12	$283,633	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00	1	$7,942,000	
	Undercrossing	EA		$10,900,000.00		$0	
							$23,088,008
11	**Station Building & Access to Platforms**						
	Passener Terminal (180'x65' Foot Print)	SM	$540.00	$638.17	2,100	$1,340,166	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$1,718,344
	Sub-Total						**$41,270,000**
	Mobilization & Indirect Field Cost		15%				**$6,190,500**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$47,460,500**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$11,865,125
	Subtotal- Construction Cost (Not Escalated)						**$59,325,625**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$12,102,428
	Total Estimated Project Cost						**$71,428,053**

HIGH-SPEED TRAIN PASSENGER STATION BREAKDOWN
Intermediate Stations

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S28 - Castle Air Force Base Station (BNSF N/S 6-7, BNSF Castle 1-2, Suburban - At-Grade)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	4.00	$36,400	
	Site Demolition	HECT	$800,000.00	$945,443.68	4.00	$3,781,775	
							$3,818,174
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	38,000.00	$336,814	
							$336,814
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	At Grade					$0	
							$0
6	**Track work**						
	Ballasted Track Incl. Ballast and subballast	M	$430.00	$508.18	3,760	$1,910,742	
	Turnouts, No. 50 W. Conc. Ties	EA	$700,000.00	$827,263.22	4	$3,309,053	
	Crossover, No. 50 w. Conc. Ties	EA	$1,500,000.00	$1,772,706.90	4	$7,090,828	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$12,310,622
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	10,800	$2,169,793	
	Pier Caps	SM	$175.00	$206.82	10,800	$2,233,611	
	Platform Slab	SM	$120.00	$141.82	10,800	$1,531,619	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	2,400	$709,083	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	10,800	$4,339,586	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	10,800	$2,042,158	
	Station Lighting	SM	$130.00	$153.63	10,800	$1,659,254	
	Signage	platform	$5,000.00	$5,909.02	3	$17,727	
	Platform Furnishing	platform	$45,000.00	$53,181.21	3	$159,544	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	12	$283,633	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00	1	$7,942,000	
	Undercrossing	EA		$10,900,000.00		$0	
							$23,088,008
11	**Station Building & Access to Platforms**						
	Passener Terminal (180'x65' Foot Print)	SM	$540.00	$638.17	2,100	$1,340,166	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$1,718,344
	Sub-Total						**$41,270,000**
	Mobilization & Indirect Field Cost		15%				**$6,190,500**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$47,460,500**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$11,865,125
	Subtotal- Construction Cost (Not Escalated)						**$59,325,625**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$12,102,428
	Total Estimated Project Cost						**$71,428,053**

HIGH-SPEED TRAIN PASSANGER STATION BREAKDOWN
Intermediate Stations (Local Services)

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations (Local Services)

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S29 - Union City (Shinn) Station - (Niles/I-880 4-5, Urban - Aerial)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	2.00	$18,200	
	Site Demolition	HECT	$800,000.00	$945,443.68	2.00	$1,890,887	
							$1,909,087
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	Aerial Structure	HECT	$10,750,000.00	$12,704,399.46	11.00	$139,748,394	
							$139,748,394
6	**Track work**						
	Direct Fixation	M	$430.00	$508.18		$0	
	Turnouts, No. 32.7 W. Conc. Ties	EA	$700,000.00	$827,263.22		$0	
	Crossover, No. 32.7 w. Conc. Ties	EA	$1,500,000.00	$1,772,706.90	4	$7,090,828	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$7,090,828
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	$170.00	$200.91	7,200	$1,446,529	
	Pier Caps	SM	$175.00	$206.82	7,200	$1,489,074	
	Platform Slab	SM	$120.00	$141.82	7,200	$1,021,079	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	800	$236,361	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	7,200	$2,893,058	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	7,200	$1,361,439	
	Station Lighting	SM	$130.00	$153.63	7,200	$1,106,169	
	Signage	platform	$5,000.00	$5,909.02	2	$11,818	
	Platform Furnishing	platform	$45,000.00	$53,181.21	2	$106,362	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	8	$189,089	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00		$0	
	Undercrossing	EA		$10,900,000.00	1	$10,900,000	
							$20,760,978
11	**Station Building & Access to Platforms**						
	Passenger Terminal (Station Category III)	SM	$540.00	$638.17	5,539	$3,534,848	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$3,913,026
	Sub-Total						**$173,420,000**
	Mobilization & Indirect Field Cost		15%				**$26,013,000**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$199,433,000**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$49,858,250
	Subtotal- Construction Cost (Not Escalated)						**$249,291,250**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$50,855,415
	Total Estimated Project Cost						**$300,146,665**

HIGH-SPEED TRAIN PASSANGER STATION BREAKDOWN
Intermediate Stations (Local Services)

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations (Local Services)

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S30 - Newark Station (Caltrain 2-3, Suburban - Aerial)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	2.00	$18,200	
	Site Demolition	HECT	$800,000.00	$945,443.68	2.00	$1,890,887	
							$1,909,087
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	Aerial Structure	HECT	$10,750,000.00	$12,704,399.46	11.00	$139,748,394	
							$139,748,394
6	**Track work**						
	Direct Fixation	M	$430.00	$508.18		$0	
	Turnouts, No. 32.7 W. Conc. Ties	EA	$700,000.00	$827,263.22		$0	
	Crossover, No. 32.7 w. Conc. Ties	EA	$1,500,000.00	$1,772,706.90	4	$7,090,828	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$7,090,828
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	7,200	$1,446,529	
	Pier Caps	SM	$175.00	$206.82	7,200	$1,489,074	
	Platform Slab	SM	$120.00	$141.82	7,200	$1,021,079	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	800	$236,361	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	7,200	$2,893,058	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	7,200	$1,361,439	
	Station Lighting	SM	$130.00	$153.63	7,200	$1,106,169	
	Signage	platform	$5,000.00	$5,909.02	2	$11,818	
	Platform Furnishing	platform	$45,000.00	$53,181.21	2	$106,362	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	8	$189,089	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00		$0	
	Undercrossing	EA		$10,900,000.00	1	$10,900,000	
							$20,760,978
11	**Station Building & Access to Platforms**						
	Passenger Terminal (Station Category III)	SM	$540.00	$638.17	5,539	$3,534,848	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$3,913,026
	Sub-Total						**$173,420,000**
	Mobilization & Indirect Field Cost		15%				**$26,013,000**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$199,433,000**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$49,858,250
	Subtotal- Construction Cost (Not Escalated)						**$249,291,250**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$50,855,415
	Total Estimated Project Cost						**$300,146,665**

HIGH-SPEED TRAIN PASSANGER STATION BREAKDOWN
Intermediate Stations (Local Services)

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations (Local Services)

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S31 - Pleasanton (BART) Station (I-680/580/UPRR 1-2, Suburban - Aerial)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	4.00	$36,400	
	Site Demolition	HECT	$800,000.00	$945,443.68	4.00	$3,781,775	
							$3,818,174
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	Aerial Structure	HECT	$10,750,000.00	$12,704,399.46	11.00	$139,748,394	
							$139,748,394
6	**Track work**						
	Direct Fixation	M	$800.23	$945.72		$0	
	Turnouts, No. 50 W. Conc. Ties	EA	$365,000.00	$431,358.68		$0	
	Crossover, No. 50 w. Conc. Ties	EA	$750,000.00	$886,353.45	4	$3,545,414	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$3,545,414
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	7,200	$1,446,529	
	Pier Caps	SM	$175.00	$206.82	7,200	$1,489,074	
	Platform Slab	SM	$120.00	$141.82	7,200	$1,021,079	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	800	$236,361	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	7,200	$2,893,058	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	7,200	$1,361,439	
	Station Lighting	SM	$130.00	$153.63	7,200	$1,106,169	
	Signage	platform	$5,000.00	$5,909.02	2	$11,818	
	Platform Furnishing	platform	$45,000.00	$53,181.21	2	$106,362	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	8	$189,089	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00		$0	
	Undercrossing	EA		$10,900,000.00	1	$10,900,000	
							$20,760,978
11	**Station Building & Access to Platforms**						
	Passenger Terminal (Station Category III)	SM	$540.00	$638.17	5,539	$3,534,848	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$3,913,026
	Sub-Total						**$171,790,000**
	Mobilization & Indirect Field Cost		15%				**$25,768,500**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$197,558,500**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$49,389,625
	Subtotal- Construction Cost (Not Escalated)						**$246,948,125**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$50,377,418
	Total Estimated Project Cost						**$297,325,543**

HIGH-SPEED TRAIN PASSANGER STATION BREAKDOWN
Intermediate Stations (Local Services)

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations (Local Services)

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S32 - Pleasanton (I-680/Bernal) Station (UPRR 3-4, Suburban - At Grade)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	4.00	$36,400	
	Site Demolition	HECT	$800,000.00	$945,443.68	4.00	$3,781,775	
							$3,818,174
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	150,000.00	$1,329,530	
							$1,329,530
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	At grade					$0	
							$0
6	**Track work**						
	Ballasted Track Incl. Ballast and subballast	M	$430.00	$508.18		$0	
	Turnouts, No. 50 W. Conc. Ties	EA	$700,000.00	$827,263.22		$0	
	Crossover, No. 50 w. Conc. Ties	EA	$1,500,000.00	$1,772,706.90	4	$7,090,828	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$7,090,828
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	7,200	$1,446,529	
	Pier Caps	SM	$175.00	$206.82	7,200	$1,489,074	
	Platform Slab	SM	$120.00	$141.82	7,200	$1,021,079	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	800	$236,361	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	7,200	$2,893,058	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	7,200	$1,361,439	
	Station Lighting	SM	$130.00	$153.63	7,200	$1,106,169	
	Signage	platform	$5,000.00	$5,909.02	2	$11,818	
	Platform Furnishing	platform	$45,000.00	$53,181.21	2	$106,362	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	8	$189,089	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00	1	$7,942,000	
	Undercrossing	EA		$10,900,000.00		$0	
							$17,802,978
11	**Station Building & Access to Platforms**						
	Passenger Terminal (Station Category III)	SM	$540.00	$638.17	5,539	$3,534,848	
	Ticketing (Enclosed)	SM	$3,200.00	$1.18	100	$118	
							$3,534,967
	Sub-Total						**$33,580,000**
	Mobilization & Indirect Field Cost		15%				**$5,037,000**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$38,617,000**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$9,654,250
	Subtotal- Construction Cost (Not Escalated)						**$48,271,250**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$9,847,335
	Total Estimated Project Cost						**$58,118,585**

HIGH-SPEED TRAIN PASSANGER STATION BREAKDOWN
Intermediate Stations (Local Services)

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations (Local Services)

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S33 - Livermore 1 (I-580) Station (I-680/580/UPRR 3-4, Undeveloped - Aerial)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	-	$0	
	Site Demolition	HECT	$800,000.00	$945,443.68	-	$0	
							$0
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	Aerial Structure	HECT	$10,750,000.00	$12,704,399.46	4.00	$43,000,000	
							$43,000,000
6	**Track work**						
	Direct Fixation	M	$800.23	$945.72		$0	
	Turnouts, No. 50 W. Conc. Ties	EA	$365,000.00	$431,358.68		$0	
	Crossover, No. 50 w. Conc. Ties	EA	$750,000.00	$886,353.45	4	$3,545,414	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$3,545,414
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	10,800	$2,169,793	
	Pier Caps	SM	$175.00	$206.82	10,800	$2,233,611	
	Platform Slab	SM	$120.00	$141.82	10,800	$1,531,619	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	2,400	$709,083	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	10,800	$4,339,586	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	10,800	$2,042,158	
	Station Lighting	SM	$130.00	$153.63	10,800	$1,659,254	
	Signage	platform	$5,000.00	$5,909.02	3	$17,727	
	Platform Furnishing	platform	$45,000.00	$53,181.21	3	$159,544	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	12	$283,633	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00		$0	
	Undercrossing	EA		$10,900,000.00	1	$10,900,000	
							$26,046,008
11	**Station Building & Access to Platforms**						
	Passenger Terminal (Station Category III)	SM	$540.00	$638.17	5,539	$3,534,848	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$3,913,026
	Sub-Total						**$76,500,000**
	Mobilization & Indirect Field Cost		15%				**$11,475,000**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$87,975,000**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$21,993,750
	Subtotal- Construction Cost (Not Escalated)						**$109,968,750**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$22,433,625
	Total Estimated Project Cost						**$132,402,375**

HIGH-SPEED TRAIN PASSANGER STATION BREAKDOWN
Intermediate Stations (Local Services)

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations (Local Services)

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S34 - Livermore 2 (Downtown) Station (UPRR 5-6, Urban - At Grade)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	4.00	$36,400	
	Site Demolition	HECT	$800,000.00	$945,443.68	4.00	$3,781,775	
							$3,818,174
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	150,000.00	$1,329,530	
							$1,329,530
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	At grade						
							$0
6	**Track work**						
	Ballasted Track Incl. Ballast and subballast	M	$430.00	$508.18		$0	
	Turnouts, No. 50 W. Conc. Ties	EA	$700,000.00	$827,263.22		$0	
	Crossover, No. 50 w. Conc. Ties	EA	$1,500,000.00	$1,772,706.90	4	$7,090,828	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$7,090,828
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	7,200	$1,446,529	
	Pier Caps	SM	$175.00	$206.82	7,200	$1,489,074	
	Platform Slab	SM	$120.00	$141.82	7,200	$1,021,079	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	800	$236,361	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	7,200	$2,893,058	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	7,200	$1,361,439	
	Station Lighting	SM	$130.00	$153.63	7,200	$1,106,169	
	Signage	platform	$5,000.00	$5,909.02	2	$11,818	
	Platform Furnishing	platform	$45,000.00	$53,181.21	2	$106,362	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	8	$189,089	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00	1	$7,942,000	
	Undercrossing	EA		$10,900,000.00		$0	
							$17,802,978
11	**Station Building & Access to Platforms**						
	Passenger Terminal (Station Category III)	SM	$540.00	$638.17	5,539	$3,534,848	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$3,913,026
	Sub-Total						**$33,950,000**
	Mobilization & Indirect Field Cost		15%				**$5,092,500**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$39,042,500**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$9,760,625
	Subtotal- Construction Cost (Not Escalated)						**$48,803,125**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$9,955,838
	Total Estimated Project Cost						**$58,758,963**

HIGH-SPEED TRAIN PASSANGER STATION BREAKDOWN
Intermediate Stations (Local Services)

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations (Local Services)

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S35 - Livermore 2 (Downtown) Station (UPRR 5-6, Urban - Aerial)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	2.00	$18,200	
	Site Demolition	HECT	$800,000.00	$945,443.68	2.00	$1,890,887	
							$1,909,087
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	Aerial Structure	HECT	$10,750,000.00	$12,704,399.46	11.00	$139,748,394	
							$139,748,394
6	**Track work**						
	Direct Fixation	M	$430.00	$508.18		$0	
	Turnouts, No. 50 W. Conc. Ties	EA	$700,000.00	$827,263.22		$0	
	Crossover, No. 50 w. Conc. Ties	EA	$1,500,000.00	$1,772,706.90	4	$7,090,828	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$7,090,828
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	7,200	$1,446,529	
	Pier Caps	SM	$175.00	$206.82	7,200	$1,489,074	
	Platform Slab	SM	$120.00	$141.82	7,200	$1,021,079	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	800	$236,361	
	Platform Finish Work- excluded					$0	
	Canopy- Str. Steel	SM	$340.00	$401.81	7,200	$2,893,058	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	7,200	$1,361,439	
	Station Lighting	SM	$130.00	$153.63	7,200	$1,106,169	
	Signage	platform	$5,000.00	$5,909.02	2	$11,818	
	Platform Furnishing	platform	$45,000.00	$53,181.21	2	$106,362	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	8	$189,089	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00		$0	
	Undercrossing	EA		$10,900,000.00	1	$10,900,000	
							$20,760,978
11	**Station Building & Access to Platforms**						
	Passenger Terminal (Station Category III)	SM	$540.00	$638.17	5,539	$3,534,848	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$3,913,026
	Sub-Total						**$173,420,000**
	Mobilization & Indirect Field Cost		15%				**$26,013,000**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$199,433,000**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$49,858,250
	Subtotal- Construction Cost (Not Escalated)						**$249,291,250**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$50,855,415
	Total Estimated Project Cost						**$300,146,665**

HIGH-SPEED TRAIN PASSANGER STATION BREAKDOWN
Intermediate Stations (Local Services)

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations (Local Services)

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S36 - Livermore (Greenville Road/I-580) Station (I-680/580/UPRR 4-5, Undeveloped - Aerial)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	-	$0	
	Site Demolition	HECT	$800,000.00	$945,443.68	-	$0	
							$0
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	Aerial Structure	HECT	$10,750,000.00	$12,704,399.46	4.00	$50,817,598	
							$50,817,598
6	**Track work**						
	Direct Fixation	M	$800.23	$945.72		$0	
	Turnouts, No. 50 W. Conc. Ties	EA	$365,000.00	$431,358.68		$0	
	Crossover, No. 50 w. Conc. Ties	EA	$750,000.00	$886,353.45	4	$3,545,414	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$3,545,414
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	10,800	$2,169,793	
	Pier Caps	SM	$175.00	$206.82	10,800	$2,233,611	
	Platform Slab	SM	$120.00	$141.82	10,800	$1,531,619	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	2,400	$709,083	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	10,800	$4,339,586	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	10,800	$2,042,158	
	Station Lighting	SM	$130.00	$153.63	10,800	$1,659,254	
	Signage	platform	$5,000.00	$5,909.02	3	$17,727	
	Platform Furnishing	platform	$45,000.00	$53,181.21	3	$159,544	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	12	$283,633	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00	1	$7,942,000	
	Undercrossing	EA		$10,900,000.00		$0	
							$23,088,008
11	**Station Building & Access to Platforms**						
	Passenger Terminal (Station Category III)	SM	$540.00	$638.17	5,539	$3,534,848	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$3,913,026
	Sub-Total						**$81,360,000**
	Mobilization & Indirect Field Cost		15%				**$12,204,000**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$93,564,000**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$23,391,000
	Subtotal- Construction Cost (Not Escalated)						**$116,955,000**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$23,858,820
	Total Estimated Project Cost						**$140,813,820**

HIGH-SPEED TRAIN PASSANGER STATION BREAKDOWN
Intermediate Stations (Local Services)

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations (Local Services)

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S37 - Livermore (Greenville Road/UPRR) Station						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	4.00	$36,400	
	Site Demolition	HECT	$800,000.00	$945,443.68	4.00	$3,781,775	
							$3,818,174
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	150,000.00	$1,329,530	
							$1,329,530
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	At grade					$0	
							$0
6	**Track work**						
	Ballasted Track Incl. Ballast and subballast	M	$430.00	$508.18		$0	
	Turnouts, No. 50 W. Conc. Ties	EA	$700,000.00	$827,263.22		$0	
	Crossover, No. 50 w. Conc. Ties	EA	$1,500,000.00	$1,772,706.90	4	$7,090,828	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$7,090,828
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	7,200	$1,446,529	
	Pier Caps	SM	$175.00	$206.82	7,200	$1,489,074	
	Platform Slab	SM	$120.00	$141.82	7,200	$1,021,079	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	800	$236,361	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	7,200	$2,893,058	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	7,200	$1,361,439	
	Station Lighting	SM	$130.00	$153.63	7,200	$1,106,169	
	Signage	platform	$5,000.00	$5,909.02	2	$11,818	
	Platform Furnishing	platform	$45,000.00	$53,181.21	2	$106,362	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	8	$189,089	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00	1	$7,942,000	
	Undercrossing	EA		$10,900,000.00		$0	
							$17,802,978
11	**Station Building & Access to Platforms**						
	Passenger Terminal (Station Category III)	SM	$540.00	$638.17	5,539	$3,534,848	
	Ticketing (Enclosed)	SM	$3,200.00	$1.18	100	$118	
							$3,534,967
	Sub-Total						**$33,580,000**
	Mobilization & Indirect Field Cost		15%				**$5,037,000**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$38,617,000**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$9,654,250
	Subtotal- Construction Cost (Not Escalated)						**$48,271,250**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$9,847,335
	Total Estimated Project Cost						**$58,118,585**

HIGH-SPEED TRAIN PASSANGER STATION BREAKDOWN
Intermediate Stations (Local Services)

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations (Local Services)

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S38 - Tracy 1 (Downtown) Station (UPRR 10-11, Urban - Aerial)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	2.00	$18,200	
	Site Demolition	HECT	$800,000.00	$945,443.68	2.00	$1,890,887	
							$1,909,087
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	Aerial Structure	HECT	$10,750,000.00	$12,704,399.46	11.00	$139,748,394	
							$139,748,394
6	**Track work**						
	Direct Fixation	M	$430.00	$508.18		$0	
	Turnouts, No. 32.7 W. Conc. Ties	EA	$700,000.00	$827,263.22		$0	
	Crossover, No. 32.7 w. Conc. Ties	EA	$1,500,000.00	$1,772,706.90	4	$7,090,828	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$7,090,828
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	7,200	$1,446,529	
	Pier Caps	SM	$175.00	$206.82	7,200	$1,489,074	
	Platform Slab	SM	$120.00	$141.82	7,200	$1,021,079	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	800	$236,361	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	7,200	$2,893,058	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	7,200	$1,361,439	
	Station Lighting	SM	$130.00	$153.63	7,200	$1,106,169	
	Signage	platform	$5,000.00	$5,909.02	2	$11,818	
	Platform Furnishing	platform	$45,000.00	$53,181.21	2	$106,362	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	8	$189,089	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00		$0	
	Undercrossing	EA		$10,900,000.00	1	$10,900,000	
							$20,760,978
11	**Station Building & Access to Platforms**						
	Passenger Terminal (Station Category III)	SM	$540.00	$638.17	5,539	$3,534,848	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$3,913,026
	Sub-Total						**$173,420,000**
	Mobilization & Indirect Field Cost		15%				**$26,013,000**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$199,433,000**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$49,858,250
	Subtotal- Construction Cost (Not Escalated)						**$249,291,250**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$50,855,415
	Total Estimated Project Cost						**$300,146,665**

HIGH-SPEED TRAIN PASSANGER STATION BREAKDOWN
Intermediate Stations (Local Services)

PARSONS BRINCKERHOFF

PROJECT: California High Speed Train EIR/EIS DATE: 3/1/2007

Intermediate Stations (Local Services)

CONCEPTUAL CONSTRUCTION COST ESTIMATE

Item No.	DESCRIPTION	UNIT	UNIT COST (June 2003$)	UNIT COST (November 2006$)	QUANTITY	Estimated Cost	Category Total Cost
	S39 - Tracy 2 (Existing ACE) Station (SUPRR 2-3, Suburban - Aerial)						
1	**Site Clearing**						
	Site Clearing	HECT	$7,700.00	$9,099.90	2.00	$18,200	
	Site Demolition	HECT	$800,000.00	$945,443.68	2.00	$1,890,887	
							$1,909,087
2	**Earthwork**						
	Grading Site- Cut & Fill 1M Average	M3	$7.50	$8.86	-	$0	
							$0
3	**Paving & Surfacing- excluded**						
							$0
4	**Piped Utilities- excluded**						
							$0
5	**Site Structural Work**						
	Aerial Structure	HECT	$10,750,000.00	$12,704,399.46	11.00	$139,748,394	
							$139,748,394
6	**Track work**						
	Direct Fixation	M	$430.00	$508.18		$0	
	Turnouts, No. 50 W. Conc. Ties	EA	$700,000.00	$827,263.22		$0	
	Crossover, No. 50 w. Conc. Ties	EA	$1,500,000.00	$1,772,706.90	4	$7,090,828	
	Bumping Posts	EA	$50,000.00	$59,090.23		$0	
	Heavy Duty Rubber Grade Crossing						
							$7,090,828
7	**Station Electrical Work**						
	CCTV & Security System- excluded						
	Communication System-excluded						
	Lighting- See Item 10						
							$0
8	**Traction Power**						
	(Included in Overall Estimate)						
							$0
9	**Train Control**						
	(Included in Overall Estimate)						
							$0
10	**Station Platform**						
	Platforms:						
	Foundation- Pier Caissons	SM	170	$200.91	7,200	$1,446,529	
	Pier Caps	SM	$175.00	$206.82	7,200	$1,489,074	
	Platform Slab	SM	$120.00	$141.82	7,200	$1,021,079	
	Platform Warning Edge & Rubbing Edge	M	$250.00	$295.45	800	$236,361	
	Platform Finish Work- excluded						
	Canopy- Str. Steel	SM	$340.00	$401.81	7,200	$2,893,058	
	Canopy Roof Metal Deck, Roofing, Gutter, Etc.	SM	$160.00	$189.09	7,200	$1,361,439	
	Station Lighting	SM	$130.00	$153.63	7,200	$1,106,169	
	Signage	platform	$5,000.00	$5,909.02	2	$11,818	
	Platform Furnishing	platform	$45,000.00	$53,181.21	2	$106,362	
	Windscreen Shelter- 4 ea. Per Platform	EA	$20,000.00	$23,636.09	8	$189,089	
	Pedestiran Crossing						
	Overcrossing	EA		$7,942,000.00		$0	
	Undercrossing	EA		$10,900,000.00	1	$10,900,000	
							$20,760,978
11	**Station Building & Access to Platforms**						
	Passenger Terminal (Station Category III)	SM	$540.00	$638.17	5,539	$3,534,848	
	Ticketing (Enclosed)	SM	$3,200.00	$3,781.77	100	$378,177	
							$3,913,026
	Sub-Total						**$173,420,000**
	Mobilization & Indirect Field Cost		15%				**$26,013,000**
	Subtotal- Construction Cost- Base (year 2006 dollars)						**$199,433,000**
	Escalation to Midpoint of Construction- not included						
	Right of way Acquisition						
	Contingencies (25% of Total Construction Cost)						$49,858,250
	Subtotal- Construction Cost (Not Escalated)						**$249,291,250**
	Project Conceptual & Preliminary Engineering						
	Final Engineering Design Cost						
	Construction Management & Inspection Costs @ 10%						
	Field Changed Condition						
	Owner Administration & Engineering						
	Program Implementation Costs (25.5% of Total Cost & Procurement)						$50,855,415
	Total Estimated Project Cost						**$300,146,665**